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The Death Valley Expedition of 1891: A Description of Fieldwork Activities, C. Hart Merriam Itinerary, Area Descriptions, and Mammal Report



Clinton Hart Merriam, M.D.[†], *and Douglas L. Threloff*

Front cover: Members of the Death Valley Expedition. Lone Pine, California. June 13, 1891. From left to right: Vernon Bailey, C. Hart Merriam, T. S. Palmer, and A. K. Fisher. Photograph courtesy of the Bancroft Library, University of California–Berkeley. (Original photograph professionally edited for sharpness and clarity.)

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Clinton Hart Merriam, M.D.†, and Douglas L. Threloff

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The Death Valley Expedition of 1891: A Description of Fieldwork Activities, C. Hart Merriam Itinerary, Area Descriptions, and Mammal Report

Clinton Hart Merriam, M.D.†, and Douglas L. Threloff

† Deceased

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Museum at Texas Tech University
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Map 2. Locations where mammal collections or observations occurred in Nevada, Arizona, and Utah during the Death Valley Expedition. Note that county names and boundaries reflect modern designations; these may vary from historic county names or boundaries at the time of the Expedition.

PREFACE

by Douglas L. Threloff

The Death Valley Expedition (Expedition) of 1891 is arguably the greatest large-scale biological exploration that ever occurred in the Mohave Desert. The fieldwork associated with that expedition took place between November 3, 1890, and January 4, 1892, and specimen collections were made in California, Nevada, Utah, and Arizona. In spite of its name, the geographic range associated with the Expedition's collections also included locations in the Great Basin Desert in southern and central Nevada, the coastal counties of central California, the southern one-third of the Sierra Nevada mountain range, and California's Central Valley. Fieldwork occurred at elevations as low as 160 feet below sea level at Furnace Creek Ranch, and as high as 10,200 feet at Big Cottonwood Meadows, both of which occur in Inyo County, California.

The Expedition's ten biologists collected 5,659 mammal specimens, and 948 bird, 654 reptile, 251 amphibian, 119 fish, 44 mollusk, and 2,085 plant specimens. Several hundred insect specimens also were collected. Many, if not most, of the specimens came from locations that had not previously been sampled by field biologists, thereby substantially improving the understanding of the geographic distribution of the taxa collected. The mammal specimens were collected at no fewer than 260 different locations, and the type specimens for 29 mammal taxa were obtained. In addition to these collections, many hundreds, if not thousands, of wildlife observations also were recorded.

The only modes of transportation that existed when Expedition members were in the field were horseback, horse-drawn wagon, stagecoach, and steam locomotive. The biologists worked in conditions that at the extremes included camping when an inch of ice formed overnight on local creeks, or when temperatures reached ~ 118° F (48° C) during the day and caused a thermometer to explode. There was no air conditioning, campsites frequently were limited to one or two canvas tents, the only maps that were available to guide Expedition members existed at a coarse 1:253,440 scale, commercial communications were limited to the telegraph and horse-dependent mail routes, and the modern-era personal computers biologists now use to store, analyze, and report data would not become available for another 80+ years.

The North American Fauna (NAF) Number 7 volume, i.e., *The Death Valley Expedition: A Biological Survey of Parts of California, Nevada, Arizona, and Utah, Part II* (Fisher et al. 1893), provides an accounting of the birds, reptiles, amphibians, fish, insects, mollusks, trees, shrubs, cactuses, and yuccas collected during the Expedition. For those interested in botany, the information pertaining to plants collected or observed during the Expedition can be found in Coville (1893).

The NAF Number 6 volume, however, was never published. This publication is meant to fill that void and to provide the content and historical nomenclature that likely would have been included in the NAF Number 6 volume, had it been published. This publication is not, however, a publication issued by a Federal agency. In keeping with the Letter of Transmittal in the NAF Number 7 volume, this publication provides the Expedition's Part I General Report describing how the Expedition was conducted, miscellaneous information relating to that endeavor, an itinerary for Dr. C. Hart Merriam, the Expedition leader, and descriptions of some of the areas surveyed by Expedition members. It also provides a Mammal Report, prepared by Douglas Threloff, listing the mammal taxa and specimens collected or observed by the Expedition biologists.

In this publication, the publishers have attempted to closely mimic, with some exceptions, the format that would have been used for the historical document, had it been published in the late 1800's as North American Fauna Number 6. Thus, the formatting of this publication varies in several ways from the standard formatting

of Special Publications of the Museum (e.g., the text is laid out in full page format, rather than in two columns; vertical borders are used in tables; etc.).

Dr. Merriam died in 1942. The General Report herein was adapted from a draft, 341-page manuscript (typed, with handwritten annotations) that is archived as part of the Clinton Hart Merriam papers at the University of California's Museum of Vertebrate Zoology (MVZ) in Berkeley, California. The draft manuscript was obtained from the archives by Douglas Threloff, but because it was likely written by C. Hart Merriam, for the purposes of this document, Merriam is considered to be the primary author of the General Report. The General Report has been edited by Douglas Threloff, however, to provide Introduction and Methods sections and to standardize the historic taxonomic and geographic names. The Mammal Report was written solely by Douglas Threloff based on the records in the Expedition biologist's field catalogs and special reports. Scientific and common names of taxa in both the General and Mammal reports appear as they did in the original documents (or would have appeared at that time) and were not edited to reflect current taxonomy or currently recognized common names. Instead, appendices (I–V) were developed by the second author that cross reference the historical names that appear in this publication and would likely have appeared in a North American Fauna Number 6 volume, had it been published, with modern-day taxonomic and common names.

This publication provides critical insight into a largely unaltered landscape and vertebrate fauna that has since come under pressure from anthropogenic developments and activities and from climate change. It is hoped that by publishing this document, twenty-first century biologists can use the information provided herein to gauge the magnitude of the effects of human-related activities after Expedition biologists conducted their work in the nineteenth century.

Content note: The second author and the publisher of this volume recognize that the historical text by C. Hart Merriam herein contains a few terms that may be considered offensive today. We have made the decision to retain this historical content, as it represents the original words of the writer, C. Hart Merriam. Upsetting or offensive views or terminology present in this historical work do not reflect the views of the second author or the publisher.

GENERAL REPORT: A DESCRIPTION OF FIELDWORK ACTIVITIES, C. HART MERRIAM ITINERARY, AND AREA DESCRIPTIONS

BY DR. CLINTON HART MERRIAM, M.D.[†]

EDITED BY DOUGLAS L. THRELOFF



Death Valley Expedition on the march

ABSTRACT

In 1891, biologists with the Death Valley Expedition conducted wide-ranging field surveys for mammal, bird, amphibian, reptile, fish, mollusk, insect, and plant taxa. Those surveys occurred in parts of California, Nevada, Arizona, and Utah. In spite of its name, the Expedition members also conducted inventory efforts outside Death Valley. These areas included, but were not limited to, the Colorado Desert, coastal areas in western California, and the Sierra Nevada. During that expedition, approximately 7,669 vertebrate and 2,085 plant specimens were collected, and many hundreds or thousands of additional species observations were made. The collections and observations for birds, amphibians, reptiles, fish, and mollusks were described in the North American Fauna series, volume Number 7, published in 1893, and the plants were described in a volume published by the U.S. Department of Agriculture that same year. This publication provides the content and historical nomenclature that would have likely been included in the North American Fauna Number 6 volume that was never published. That content includes: (1) a general report describing how the Expedition was conducted, the personnel that conducted fieldwork and where specific field parties worked, the itinerary of the Expedition leader, Dr. C. Hart Merriam, and descriptions of some of the areas where Expedition members conducted work; and (2) a mammal report with a catalog of the 5,659 mammal specimens collected during

the Expedition. As such, the General and Mammal reports provide a rare and richly detailed description of a landscape and the mammal taxa therein during an era that predates widespread modern-era habitat losses and species declines. Appendices are provided that contain tables that cross reference historical and modern-day taxonomic names for the vertebrate taxa collected during the Expedition.

Key words: 1891 Death Valley Expedition, mammal specimens, North American Fauna Number 6

INTRODUCTION

BY DOUGLAS L. THRELOFF

The University of California's Museum of Vertebrate Zoology (MVZ) in Berkeley, California, possesses a draft, unpublished 341-page hard copy manuscript (hereafter referred to as the "Manuscript") that was meant to be the General Report in the Number 6 volume of the North American Fauna (NAF) series. That document is archived at the MVZ as part of the Clinton Hart Merriam papers under Collection Number MVZA.MSS.0281, and it resides in Box 1, 1884–1936, Folder 7.0.

The Number 7 volume of the NAF series was published in 1893 and is titled *The Death Valley Expedition: A Biological Survey of Parts of California, Nevada, Arizona, and Utah, Part II* (Fisher et al. 1893). The Letter of Transmittal provided at the beginning of NAF Number 7 states that Part I, i.e., the NAF Number 6 volume, would provide the general report for the Death Valley Expedition, and a report on the mammals collected or observed by Expedition members. That general report would include an itinerary, description of the region surveyed by Expedition members, and discussion of the life zones articulated by Clinton Hart Merriam as they pertained to the area surveyed during that expedition.

The archived Manuscript contains five basic elements:

1. The itinerary of C. Hart Merriam as he conducted fieldwork during a portion of the Expedition.
2. A description of a presentation he gave to the Society of American Naturalists on December 27, 1892, and that generally describes his view of the "life zone" theory he developed, and how it applied to the Death Valley region.
3. Descriptions of some of the specific areas where Expedition members conducted fieldwork.
4. Lists of the locations where mammals, birds, reptiles, batrachians, fish, and plant taxa were collected or observed in some, but not all, the areas traversed by Expedition members.
5. Miscellaneous details pertaining to the Expedition. These include, but are not limited to, the manner in which the Expedition was conducted, the personnel that conducted fieldwork, and where specific field parties conducted work.

Significantly, however, the Manuscript does not provide species accounts for the mammals collected or observed during the Expedition. Because NAF Number 6 was intended to be a companion volume to NAF Number 7, it is likely the presentation style for mammal species accounts in the NAF 6 document would have paralleled the presentation style in NAF 7 for birds, reptiles, batrachians, fish, insects, and mollusks. A review of the archives

in the Smithsonian Institution, the Library of Congress in Washington, DC, and the MVZ and Bancroft Library at the University of California–Berkeley, indicates no mammal species accounts exist. It is therefore likely the mammal portion of the NAF Number 6 document, i.e., the Mammal Report, was never developed.

The time period when the Manuscript was developed and who developed it are not documented. However, given his personal interest in developing the NAF Number 6 volume and his reputation for being reluctant to delegate important work to his subordinates (Sterling, 1974:440), it is highly likely that Merriam developed that document. The Letter of Transmittal provided at the beginning of NAF 7 states that NAF 6 "…is not yet ready for the press.", which suggests NAF 6 was likely in some form of development when NAF 7 was published in 1893. There appears to be no correspondence indicating the Manuscript was developed many years after NAF Number 7 was published, and it is therefore likely Merriam developed the Manuscript in the early to mid-1890s as he worked as the Chief of the Division of Ornithology and Mammalogy in the U.S. Department of Agriculture.

The General Report provides a detailed record where vertebrate, invertebrate, and plant taxa occurred 135 years ago. As such, it provides descriptions and information for a time that predates widespread human-induced changes that have sometimes adversely and substantially affected many species' abundance, distribution, and habitats. A record such as the General Report is even more significant today as climate change-induced alterations affect species' abundance and distribution patterns on a widespread scale, as well as the habitats those species rely on.

METHODS

BY DOUGLAS L. THRELOFF

With the exceptions described below, the published version of the General Report herein maintains a high degree of fidelity to the text in the Manuscript and to the formatting and style in the NAF Number 7 volume. That approach was chosen to maintain Merriam's personal writing style and the historical character of the published version of the General Report. The edits that were made to Merriam's Manuscript are identified in the bullets below.

To improve the overall quality of the Manuscript as it was converted from a draft to published form, the second author made the following large-scale edits to create the published version of the General Report:

1. Handwritten annotations that were in the Manuscript have been inserted into the published version of the General Report.

2. Sections in the Manuscript have been re-ordered to produce a more logical sequence. For example, the introductory section with the purpose and origin of the Expedition, size and position of the area surveyed, etc., have been moved in front of Merriam's itinerary.

3. The following sections from the Manuscript were not included in the published version of the General Report: (a) Merriam's abridged itinerary; (b) the overview of his December 27, 1892, presentation to the Society of American Naturalists on his life zone theory; (c) a "Faunal Position Of The San Joaquin Valley" section which does not align with the aforementioned General Report sections; and (d) lists of locations where mammal, bird, reptile, amphibian, fish, and plant taxa were observed. These omissions were made because that vertebrate information is presented in the NAF Number 7 volume, botanist Frederick V. Coville's *Botany of the Death Valley Expedition* document (Coville 1893), or in the Mammal Report below.

4. Many dozens or a few hundred Latin taxonomic names in the Manuscript have been revised to align them with the historical nomenclature in: (1) the bird, reptile, and batrachian sections of the NAF 7 publication; (2) the 1893 Coville botany report; or (3) the mammal species accounts in the Mammal Report. Where such changes were made, Merriam's original taxonomic name is not included in the published version of the General Report for the sake of brevity and readability.

   To indicate where these changes were made, square brackets, i.e., [ ], are applied to the modified scientific names.

5. Some common names have been modified to provide standardization. For mammals, the common names in North American Fauna publications (e.g., NAF 17 for American voles of the genus *Microtus*) or taxonomic treaties for specific vertebrate groups (e.g., Grinnell's 1922 document describing kangaroo rats) were adopted. In cases where those documents did not provide common names for mammals, a taxon's common name in Grinnell (1913) was adopted. For birds, the common names in Fisher (1893) were adopted. For reptiles and amphibians, the common names in Stejneger (1893) were adopted. In the case of plant taxa, the common names in Coville (1893) were adopted if they were provided.

   To indicate where these changes were made, square brackets are applied to the modified common names.

6. Elevations in meters have been added to the published version of the General Report when there was a placeholder in the Manuscript indicating Merriam intended to provide a metric measurement, but he had not yet amended the Manuscript to provide such a number. Such elevations in meters are rounded to the nearest 25 meters to avoid the impression the aneroid barometers used by Expedition staff were highly accurate. For example, the Manuscript might state "The altitude of the San Bernardino Plain near the mouth of the pass is ___ meters (1,000 ft.)…". In that case, the placeholder was replaced with a value of 300 meters so it reads "The altitude of the San Bernardino Plain near the mouth of the pass is 300 meters (1,000 ft.)…".

7. Geographic place names have been revised to provide standardized names. This change was necessary because the Expedition biologists commonly referred to the same locality using multiple names. Where possible, the place names presented in T. S. Palmer's 1893 *List of Localities Visited by the Death Valley Expedition* section of the NAF Number 7 publication have been adopted. For example, biologist statements referring to "Bennetts Well" and "Bennett's Well" have been converted to "Bennett Wells". Abbreviations in place names have been eliminated, e.g., references to the "Argus Mts." were transformed into the "Argus Mountains". Further, many of the Manuscript's references to a specific "Range" have been replaced with the term "Mountains" when maps contemporaneous with the Expedition referred to mountains, e.g., the term "Highland Range" was changed to "Highland Mountains". And references to the word "Mojave" in the Manuscript have been changed to "Mohave" for standardization purposes and to align them with that place name in Palmer's 1893 localities document.

   To indicate where these changes were made, square brackets are applied to the modified geographic names.

8. The sequence of descriptions in the Manuscript for specific areas, e.g., the Amargosa Desert, Deep Spring Valley, etc., have been re-ordered so they are presented in an alphabetical order that is easier to search.

9. References to specific plates (photographs) have been added to text in the published version of the General Report, and indicate the occurrence of a photograph illustrating a feature or landscape that Merriam described. Those plates are presented at the end of this publication. When necessary, Adobe Lightroom software was used to improve the brightness and contrast of those pictures.

Small-scale substantive edits have been made at numerous locations in the Manuscript to improve readability and consistency of word usage; these modifications involve one or a few words. The following annotation techniques were used to indicate where such edits occurred:

1. Square brackets indicate where specific, non-taxonomic words were added or modified. For example: "Along the eastern edge of the map, corrections have been made [as a result of] the Powell Survey…".
2. A strikethrough indicates text that Merriam would have likely omitted if he had published his Manuscript.
3. Square brackets are used to provide: (a) the word "sic" where Merriam made clearly identifiable errors in the text in his Manuscript, e.g., providing a plant taxon assignment for a species Frederick Coville did not include in his 1893 Death Valley Expedition botany report or, (b) the word "illegible" to indicate the presence of Merriam's handwritten text in the Manuscript that the second author could not interpret and transcribe.

Non-substantive edits to the Manuscript that are not identified using the above-mentioned annotation techniques include:

1. Insertions of paragraph returns designed to break up large run-on paragraphs into shorter, more readable paragraphs. Some of Merriam's longer paragraphs have been retained, however, and it is acknowledged readers may find these cumbersome to read.
2. Changes in the capitalization of common names. Merriam's draft General Report provided a combination of lower and upper case text for plant and animal common names. To provide consistency, all common names have been capitalized, e.g., from "marsh hawk" to "Marsh Hawk".
3. One or two letter taxonomic spelling errors made by Merriam. For example, where he stated *Juniperus californicus* instead of *californica*.
4. Changes involving abbreviations. For example, from "Mt. Whitney" to "Mount Whitney".
5. Where the metric measurements described in bullet number 6 were inserted into the published version of the General Report.
6. Minor spelling and/or grammar issues relating to individual words, except when a scientific or common name in the Manuscript was changed to a standardized taxonomic name as described in bullet numbers 4 and 5 above.

Appendices I–V provide crosswalk tables listing the historical Latin taxonomic names of vertebrate taxa provided in the General Report (and therefore the names that would have likely occurred in a North American Fauna Number 6 volume had it been published in the 1890s) and their corresponding modern-day Latin and common names.

A word of caution: Merriam and Palmer's use of at least a few of the historical geographic names deviate from what may be used in the twenty-first century. Noteworthy examples include references to the "Mohave Desert", "Furnace Creek", "Amargosa Range", and "Borax Flat". The first term is usually used in modern times to indicate one of the four floristically-based deserts found in the American Southwest, i.e., the Mohave, Great Basin, Sonoran, and Chihuahuan deserts. Merriam used that term to refer to a physiographic area bounded by the horseshoe-shaped series of ranges comprising the San Bernardino, San Gabriel, Sierra Liebre, Tejon, Tehachapi mountains, the southern continuation of the Sierra Nevada system on the west, and the so-called Chuckwalla

Range on the east (see Map 1 in NAF 7). It is inferred that when Merriam and other Expedition biologists referred to "Furnace Creek" they were likely referring to the historical Greenland Ranch, aka modern-day Furnace Creek Ranch; today's biologists would not include that ranch in their construct of Furnace Creek, and instead limit that area to the wash two miles southeast of Furnace Creek Ranch. In regards to the Amargosa Range, that term in modern times usually refers to the north-to-south progression of the Grapevine, Funeral, and Black mountains, and where the Black Mountains are bounded on the north by Furnace Creek Wash. In Merriam's terminology, the Funeral Mountains appear to have included the modern-day Black Mountains. Lastly, Merriam and Palmer's "Borax Flat" is synonymous with modern-day Searles Lake.

GENERAL REPORT

BY C. HART MERRIAM[†]

The Death Valley Expedition was organized by the Division of Ornithology and Mammalogy of the U.S. Department of Agriculture, and, with the exceptions hereafter noted, was equipped and maintained throughout at the expense of this Division.

The Expedition began work about the first of January, 1891, and remained in the field nearly the whole year. It was made up of a varying number of small and more or less independent parties which carried on the work chiefly along different routes, meeting at infrequent intervals. During the greater part of the season there were seven of these parties.

The first half of the year was spent in the desert region, after which the several parties were concentrated in the High Sierra where they remained until September 19, 1891, when the main part of the Expedition disbanded at Visalia, a small town on the east side of the San Joaquin Valley. Subsequent to this date the west slope of the Sierra was visited in Placer County, and a small party spent several months in the Coast Ranges and intervening valleys.

PURPOSE AND ORIGIN OF THE EXPEDITION

The Death Valley Expedition is one of a series of biological surveys, begun in 1889, the primary object of which is the determination of the boundaries of the life zones of North America, with reference to their adaptability to agricultural pursuits. The particular area selected was chosen because of the unusually favorable opportunities it was believed to offer for the study of the laws governing the distribution of animals and plants, for while some of these laws are well known, it must be admitted that more than one important problem still remains unsolved. It was believed that the effects of temperature and humidity in controlling the distribution of species could be studied to exceptional advantage in this region, where the close proximity of precipitous mountains and deep desert valleys brings near together associations of species which in a more level country are characteristic of widely remote regions. In one place on the east side of the Sierra all the life zones of the North American continent from the Plateau of Mexico to the Polar Sea may be crossed in traversing a distance of only 10 miles.

In no other part of our country can be found such an exhibition of alternating series of life zones as those that mark the abrupt changes of altitude of the deserts and desert ranges between Death Valley, nearly 500 feet below the level of the sea, and the lofty summits of the High Sierra, culminating in the snow-capped peaks about Mount Whitney at an elevation of nearly 15,000 feet.

One of the special objects of the Expedition was the determination of the northern boundary of the lower division of the Lower Sonoran Zone in the Great Basin—a matter of considerable importance, because this zone marks the northern limit of successful raisin production and of the profitable cultivation of several subtropical fruits and other crops. The attempt to fix this boundary was undertaken with some misgiving by Mr. Bailey and myself, and was accomplished with great satisfaction after a horseback journey of about 1,700 miles. We succeeded in tracing the line in question completely across the deserts and barren ranges of the Great Basin all the way from the foot of the High Sierra in California to the foot of the great Colorado Plateau in Utah; and later in the season other members of the Expedition carried it northward along the west base of the Sierra, in the interior valley of California.

The inexhaustible fertility of the soil in most parts of the arid region, and consequent high value of agricultural lands wherever water may be had in quantity sufficient for irrigation, taken in connection with the recent unparalleled development of the fruit-growing industry in southern California and Arizona, make it of the utmost importance to know beforehand just what crops are likely to prove most successful in each particular place, and point to the advantages that will result from mapping the boundaries of the areas fitted by nature for each of these products; for different parts of the Lower Sonoran Zone are adapted not only to the successful cultivation of cotton and tobacco, but also to the needs of the orange, fig, raisin grape, almond, olive, and many other products requiring a warm climate for their profitable development.

In order to accomplish the objects of the Expedition it was necessary to make large collections representing the fauna and flora of numerous localities of different altitudes, to be studied in connection with the physical conditions and climatology of various parts of the several zones. The collections brought back and deposited in the U.S. National Museum comprise about 1,000 reptiles and batrachians, 1,000 birds, 6,000 mammals, 4,500 insects, and 25,000 [sic] plants, besides a number of fishes and mollusks from the hot springs of some of the interior deserts, and several hundred miscellaneous specimens. In working up these collections the services of several naturalists of world-wide renown were secured without expense to the Department, and their reports have been already published in Part II of the Report of the Expedition (issued May 31, 1893). Part II contains the reports on birds (by Dr. A.K. Fisher), reptiles and batrachians (by Leonhard Stejneger), fishes (by Professor Charles H. Gilbert), mollusks (by Dr. R.E.C. Stearns), and the desert shrubs, yuccas, and cacti (by Dr. C. Hart Merriam). Both parts are illustrated by plates and maps.

The present part (Part I) contains the narrative of the Expedition, descriptions of the region traversed, discussion of the life zones and other general and theoretical matter, and the report on mammals. A special report on botany has been published as a separate volume by Mr. F.V. Coville, botanist of the Expedition (issued Nov. 29, 1893).

A large number of new species and several previously unknown genera were obtained. New species were found of mammals, reptiles, batrachians, fishes, insects, mollusks, and plants; and new genera of fishes, insects, and plants. Perhaps the most interesting new genus is a fish from the warm springs of the Amargosa Desert on the boundary between California and Nevada, (named *Empetrichthys* by Professor Gilbert; See Part II, p. 233–234, & pl V.). The surprising circumstance connected with this fish is that its nearest known relatives (belonging to the genus *Orestias*) inhabit the streams of Titicaca Basin in the high Andes of South America.

Another interesting discovery is a shell found living in a hot spring in Pahranagat Valley, Nevada, that belongs to a species previously known in the fossil state only. It is the *Tryonia clathrata* of Stimpson, from the Colorado Desert (See Part II, p. 281). ~~On finding it among the mollusks sent in by the Expedition, Dr. W.H. Dall (to whom all the mollusks were submitted) wrote the following letter to the Hon. Edwin Willits, Assistant Secretary of Agriculture:~~

The discoveries in the way of extensions of range of known species are too numerous to be chronicled in the present connection. Suffice it here to state that many species of mammals, birds, reptiles, batrachians, insects, mollusks, and plants heretofore recorded from our extreme southern border only, or from isolated localities in the far southwest, were found to range over a considerable area in eastern California, western and southern Nevada, western Arizona, and even into southwestern Utah, inhabiting thousands of square miles formerly supposed to lie entirely outside the limits of their range.

In addition to the results mentioned, the large series of specimens collected, representing with considerable completeness the fauna of a region about 100,000 square miles in area, including extensive parts of all the life zones of the country, have made it possible as well as necessary to revise a number of genera, the material for which has not before been available.

Important studies were made of the food habits and economic status of many species of mammals, birds, and reptiles, and information was obtained reflecting the [best means of controlling] the harmful kinds.

Incidentally, much information was gathered concerning the geography, topography, climatology, character of the soil, and other physical features of the country, thus adding largely to the knowledge of this interesting but previously little-known region.

SIZE AND POSITION OF THE AREA SURVEYED

The area of which a biological survey was made comprises about 100,000 square miles in southern California and Nevada, situated between the parallels of 34° 30' and 38° north latitude. It comprises also a small area in northwestern Arizona and southwestern Utah, thus including all of the torrid desert valleys and basin ranges between the High Sierra and the Colorado Plateau. The great Sierra Nevada was crossed along four distinct lines, and both slopes were worked with considerable detail. The Mohave Desert was traversed in various directions, and was worked to its extreme western end. Some work was done also in the Tejon Mountains—the westward continuation of the Sierra—in the Cañada de las Uvas, the San Joaquin Valley, and the coast region in Monterey and San Luis Obispo counties. Thus a broad zone, more than 200 miles in breadth and 500 in greatest length, stretching from the Pacific Ocean to the Colorado Plateau in Utah and Arizona, was covered and the present survey was practically connected with the biological survey of the San Francisco Mountain region in Arizona made during the summer of 1889 (see North American Fauna, No. 3).

MANNER OF CONDUCTING THE EXPEDITION

The members of the Expedition traveled on horseback or muleback, and the outfit of each party, always reduced to the smallest compass consistent with the requirements of the work, was transported by pack mules or wagon according to the character of the country. As a rule, pack animals were used in the mountains and wagons on the desert.

Owing to the inaccessibility of the greater part of the region covered by the Expedition, and the arid nature of the country, with consequent scarcity of the three essentials—water, grass, and fuel—serious obstacles were encountered that are unknown outside of desert regions. The difficulties arising from scarcity of water and grass, which in most places was utterly insufficient for the needs of a large number of animals, were reduced to a minimum by dividing the Expedition into small parties, each of which comprised one or more scientific experts, accompanied by a man who served in the double capacity of cook and packer or teamster. These small parties worked along independent routes and met at infrequent intervals in widely separated localities, sometimes interchanging men and animals. The worst part of the excessive heat of summer was avoided by completing the desert work before July.

Water was invariably carried for the men, and when the distances between its sources was too great to be compassed in a day or at most a day and a half, a supply was usually taken for the animals. Wagons were provided with outriggers for carrying barrels of water, one on each side between the front and hind wheels and entirely outside of the box. These barrels when full add enormously to the weight of the load, which was particularly unfortunate in view of the fact that the places where it was most necessary to carry water are hot stretches of sandy desert where the wheels [sink deeply with] this additional burden.

After water, the next essential is food for the animals. Grass is always scarce, and sometimes absent over large areas. When found at all, it is usually one of three kinds, the economic values of which are widely unequal. The most nutritious is the bunch grass (*Oryzopsis* [*membranacea*]), which grows on the desert at long distances from water and is by far the best feed in the country. Next in importance is the coarse sacaton grass ([*Sporobolus*] sp.) which grows in tufts or clumps on soil more or less impregnated with salt and alkali, and where its roots can find moisture. The commonest and least valuable of the three is salt grass (*Distichlis* [*spicata*]) which is never found except in moist situations, generally on the borders of alkaline and saline pools or springs, and which is likely to cause swollen gums and other ill effects in the animals that eat it.

When traveling on the deserts it was usually found best not to attempt to camp at water, but to pass water if possible once in each twenty-four hours, and camp at places where grass could be obtained. This was not always possible, and too often the poor animals had to spend the night without a morsel of food or a drop of water, and tied close together to prevent wandering. For this reason, it was necessary to carry feed: hay was out of the question on account of its bulk, and grain could not be taken except in small quantities because of its weight and the long distances it had to be hauled. In fact, in some of the more remote parts of the desert it was found that a team sent to the nearest settlement for grain consumed nearly its whole load in making the round trip; hence it was not surprising that the animals were usually in poor condition and incapable of long sustained exertion. From time to time a horse or a mule gave out and was allowed to follow unloaded or was abandoned on the desert.

Fuel for cooking was more plentiful and as a rule more easily obtained than in some parts of the west, though consisting as usual of small desert brush. In the more southern and lower basins it consisted chiefly of the Creosote Bush (*Larrea tridentata*) and greasewoods of the genus *Atriplex*, with the occasional addition of mesquite (*Prosopis*), and in the more northern and higher plains, of the true sagebrush (*Artemisia tridentata*). In the mountains, Nut Pines, junipers or other small trees were usually obtainable.

In undertaking a biological survey of a region comprising two or more life zones, some time is required to become familiar with the faunas and floras of the several zones, to collect the requisite series of specimens, and to ascertain the differences due to soil, moisture, and other local conditions. When this has been done, the work may be carried on with considerable rapidity; the time necessary to remain in a locality decreases from several weeks to as many days, and in the desert a single night is often sufficient. Indeed, when tracing the boundaries of the zones is the sole object, it not infrequently happens that the work can be done as one rides along on horseback, without stopping at all. This of course presupposes an intimate knowledge of the faunas and floras of the area traversed. For those reasons, the length of time spent at each of the several hundred camps of the Expedition varied from two weeks (or even longer in a few instances) to a single night; and the average stop was considerably less than a week.

The nocturnal mammals (comprising by far the greater number) were obtained by trapping. The few diurnal mammals, the birds, the reptiles and batrachians, and the plants could be obtained as a rule along the route, without special stops.

Alcohol tanks and collecting chests were invariably carried, to ensure the safe preservation and transportation of the specimens.

FISH AND GAME

In conducting an expedition through inaccessible regions, the ability to secure game or fish in sufficient quantity to form an important part of the food supply is of the greatest consequence. In the area explored by the Death Valley Expedition large game was scarce in the mountains and not found at all on the deserts. In the mountains a few deer, mountain sheep, and bears were killed; grouse were obtained sparingly, and trout, in the streams of the Sierra Nevada, were secured without difficulty and in quantity sufficient for the needs of the camp. On the deserts small game was common in places and consisted chiefly of rabbits, quails and doves; during the winter months ducks, particularly Cinnamon Teal, were obtained in considerable numbers at the warm springs and other small bodies of water. One of the parties, while at work in the Argus Mountains, subsisted largely on a big lizard locally known as Chuckwalla (*Sauromalus ater*).

PREVIOUS EXPLORATIONS

While a detailed history of previous exploration, however interesting, would be out of place in the present report, it is deemed both desirable and necessary to mention briefly the scientific expeditions that have penetrated the less accessible parts of the area, particularly the desert region between Owens Valley on the west and Utah and Arizona on the east.

The intrepid explorer Fremont seems to have been first to cross this region. Returning from the Pacific Coast in the spring of 1844, he left the San Joaquin Valley by means of what is now known as Tehachapi Pass, traversed the Mohave Desert and the other deserts to the eastward, and entered the southwestern corner of Utah—a route followed almost exactly by one of the parties of the present expedition. Fremont deserves special credit, not only for overcoming the tremendous obstacles to such a journey at that early date, but also and particularly for discerning the true character of the Great Basin, which up to that time was unknown. Moreover, in spite of all the difficulties in the way of such an undertaking, Fremont collected and brought back to the east a large number of plants, a considerable proportion of which were new. They were afterward described under the joint authorship of Torrey and Fremont. Some of those species remained unknown, save from the original descriptions, until rediscovered by the Death Valley Expedition (see under *Arctomecon californicum*, Part II, page 290).

In 1867, Lieut. (now Captain) Charles E. Bendire led a military party through part of the Death Valley region. He set out from Camp Independence in Owens Valley, traversed the south end of Death Valley and the Amargosa Desert, and penetrated as far to the northeast as Pahranagat Valley, Nevada. Returning by a more northern route, he completely encircled the Ralston Desert and reentered Owens Valley by way of Fish Lake and Deep Spring valleys, without the loss of a single man or animal.

In 1871 the Wheeler Expedition (Explorations and Surveys West of the 100th Meridian) began an exploration of the region and of the Colorado Desert to the southward.

GAPS IN THE WORK

In working up zoological and botanical collections, and in studying the results of observations on life zones, questions always arise and gaps appear that cannot be disposed of properly without additional fieldwork. In this respect the Death Valley Expedition, notwithstanding the magnitude of the collections and the fullness of the data, proved no exception to the rule. A few of these gaps have been filled during the interval between the close of the Expedition and the completion of the present report—the only mitigating feature connected with the annoying events that have so delayed the report. Most of the supplemental fieldwork accomplished was suggested by the study of the mammal collection and was done by a field agent of the Division, Mr. Clark P. Streater.

Several important and doubtless fruitful localities within the general region covered by the Expedition were not worked thoroughly, and some of them not at all. The most important of the latter are Pine Valley Mountain in southwestern Utah, and the Kingston Range and [Ivanpah] mountains in extreme eastern California. The most important localities visited by the Expedition which could not be worked thoroughly owing to the time of year, are the Charleston Mountains in Nevada and the San Bernardino Mountains in California. Additional work in the Coast Ranges also promises much of interest.

The lack of a contour map—and in fact of any map of approximate accuracy—has greatly increased the difficulty of locating the boundaries of the several zones, and has made it impossible to plot them with anything like precision.

COOPERATION

Through the earnest cooperation of Gen. A.W. Greely, Chief of the Signal Service (of which the present Weather Bureau then formed the principal part), a well-equipped meteorological station was established and maintained in Death Valley from April [to] October without expense to the Expedition.

By cooperation with the U.S. Geological Survey, through the courtesy of Major J.W. Powell, Director, two topographers were detailed to accompany the Expedition. They were recalled in August. The map accompanying the present report was compiled by the Geological Survey.

The Division of Botany of the U.S. Department of Agriculture detailed a botanist and assistant botanist to accompany the Expedition. They remained throughout the season and their expenses were met by the Division of Botany.

The Division of Entomology detailed an entomological collector to accompany the Expedition, but he was recalled at the end of [May] and was sent on a special mission to Australia. His expenses were met by the Division of Entomology.

ACKNOWLEDGEMENTS

Important aid was rendered to the Expedition by many persons. Mr. Tr. M. Smith of San Francisco, owner of the Death Valley borax deposits and the ranch at Furnace Creek, and also of the Amargosa Borax Works, gave the Expedition the free use of these establishments, each of which, though not now in operation, has a resident watchman; and extended other courtesies of material assistance. The alfalfa field at Furnace Creek—a literal oasis in the desert—served to recruit our worn out and half-starved horses and mules at various times during the season and was of incalculable benefit. Mr. Smith also granted the Expedition the privileges of establishing a meteorological station in the office of the borax works in Death Valley about two miles north of Furnace Creek, where continuous observations were made from April to September. The building thus occupied was built with special reference to the great summer heat of the valley, and without it, the meteorological work could not have been carried on.

Mr. J.W.S Perry, of Daggett in the Mohave Desert, Superintendent of Mr. Smith's Borax Works at the Calico mines, also did everything in his power to aid the Expedition and rendered important service in many ways.

Mr. N.E. Wilkinson, resident meteorological observer at Keeler on Owens Lake, turned his office into a sort of base camp for the Expedition, receiving and transmitting mail and supplies, and transacting business of

various kinds. His services as a skilled mechanic in repairing barometer and other instruments, were of great assistance and saved many irritating delays.

Capt. Charles E. Bendire, who led a military expedition through the Death Valley region twenty-five years ago (in 1867), performing a successful march of 60 days with a large party of 30 men without the loss of a single man or animal, although in those early days little was known of the whereabouts of water, gave the Expedition his journal of this trip, containing important information respecting passes in the mountains and places where water and feed could be obtained.

Mr. G. Schonewald, manager of the Del Monte Hotel ~~and the extensive property of the Company~~ at Monterey, granted permission to work at Cypress Point and other parts of the Company's property, where important collections were made.

The travels of the Expedition are due also to the U.S. Geological Survey and to the Engineer, Department of the Army for valuable map sheets.

PERSONNEL AND SEQUENCE OF THE PARTIES

The members of the Expedition were in part persons regularly employed in the Division of Ornithology and Mammalogy of the Department of Agriculture; in part special assistants and laborers employed by the Expedition; and in part technical assistants detailed by other branches of the Government service. They may be classed as follows:

Members of the Division Force

- Dr. Clinton Hart Merriam, chief of Division (in charge of Expedition)
- Theodore Sherman Palmer, first assistant (in charge during Dr. Merriam's absence)
- Dr. Albert Kenrick Fisher, assistant ornithologist (ornithologist of the Expedition)
- Vernon Orlando Bailey, chief field agent (in charge of Expedition March 27 to April 8, and of special parties at various times)
- Edward William Nelson, field agent (in charge of special party April 25 to Dec. 30, 1891)

Employed by the Expedition

- Frank Stephens, Santa Ysabel, California (in charge of party)
- Basil Hicks Dutcher, New York (in charge of meteorological station in High Sierra)
- Fred W. Koch, Escondido, California (general assistant)

Detailed by Division of Botany, U.S. Department of Agriculture

- Frederick Vernon Coville, assistant botanist (botanist of the Expedition)
- Frederick Funston, field agent (assistant botanist)

Detailed by Division of Entomology, U.S. Department of Agriculture

- Albert Koebele, field agent (entomological collector)

Detailed by U.S. Signal Service (afterward Weather Bureau)

- [Mr.] Cleary, weather observer (in charge of meteorological station in Death Valley)

Detailed by U.S. Geological Survey

- P.V.S. Bartlett, assistant topographer (in charge of topographic work)
- J.M. Dikeman, assistant topographer (assistant topographer)

Packers and teamsters employed in the field

- Thomas G. McGrath (head packer and cook)
- George W. Porter (teamster and cook)
- John W. Thomas (teamster and cook)
- Tie Sing (packer and cook)
- Chas. Richardson (packer and cook)
- Michel Barnes (teamster and cook)

The first man in the field was Vernon Bailey, chief field agent of the Division, who came in from the north by way of Battle Mountain, Reese River Valley, the Columbus and Candelaria salt marshes, and Fish Lake, Deep Spring, and Owens valleys, making collections along the route. At Lone Pine in Owens Valley, he was joined by Mr. E.W. Nelson on the 11th of December. They worked Owens Valley from Big Pine south to Owens Lake, and the lower slopes of the adjacent Sierra [Nevada] and Inyo Mountains. Leaving [Owens] Lake December 31, they moved easterly to the mining camp of Darwin, and thence southerly through Coso and Panamint valleys to Lone Willow Spring, where they joined the main party January 13, 1891.

The second or main party outfitted at San Bernardino, California, about the end of December and started north through Cajon Pass the first week in January, 1891. It consisted of my chief assistant, Mr. T.S. Palmer (who was in charge until my arrival at the end of March), Dr. A.K. Fisher (ornithologist of the Expedition), Mr. F.V. Coville (botanist), and Mr. Fred Funston (asst. botanist). They crossed the Mohave Desert, stopping at Hesperia, Daggett, and Pilot Knob (or Granite Mountain), and reached Lone Willow Spring January [13], where they were joined by Mr. Bailey and Mr. Nelson, as previously stated. Leaving Lone Willow [Spring] January [19], they proceeded through Windy Gap to Death Valley.

During the following six weeks or two months, base camps were established at Furnace Creek, Bennett Wells, Mesquite Well, and Saratoga Springs, from which various parts of [Death] Valley and adjacent mountain slopes were worked. About the first of February they crossed the Funeral Mountains through Furnace Creek [Wash] and worked the Amargosa [Valley]. Base camps were made at Resting Springs, the Amargosa Borax Works (abandoned), and Ash Meadows, and also at Twelve Mile Spring in a valley in the Kingston Range. Pahrump Valley was worked from camps at Pahrump Spring and near Stuart Spring—the latter in the extreme northwest corner of the valley. A side trip was made to the spruce belt high up in the Charleston Mountains (west of the main peak) by Mr. Palmer, Mr. Nelson, Mr. Coville, and Mr. Funston, but the snow was too deep to permit more than a hasty reconnaissance. Another side trip was made to [Las] Vegas Valley by Mr. Bailey, Mr. Nelson, and Mr. Coville, and the latter two extended the journey to the [Great] Bend of the Colorado where they remained but a single day.

The several subdivisions of the main party now returned to Death Valley, and after establishing a base camp in Johnson Cañon on the east slope of the Panamint Mountains, Mr. Palmer set out for Daggett, whereby previous

arrangement he was to meet me April 1st. The misfortune that overtook him on the way is mentioned elsewhere. During his absence an effort was made to work the Panamint Mountains at a much higher altitude than had before been practical on account of the deep snow. The mountains were ascended through Johnson Cañon, and Dr. Fisher and Mr. Nelson worked the steep east and southeast slopes of Telescope Peak up to and a little above the snow line. Crossing the range, they descended the west slope through Surprise Cañon and reached Hot Springs in Panamint Valley about April 20, where I was camped at the time.

About two weeks earlier Mr. Bailey met me at Bennett Wells in Death Valley and accompanied me to Furnace Creek where we met Mr. F. Stephens, with whom we traveled north through Mesquite Valley and thence southwesterly across the Panamint Mountains through Emigrant and Wildrose cañons to the Hot Springs in Panamint Valley, where [we] were joined by the remainder of the main party about April 20 ~~(the narrative of our trip will be found elsewhere)~~.

The third party, consisting of Mr. Frank Stephens, outfitted in southern California in February, and from San Bernardino northward to Daggett followed essentially the same route as the main party. From Daggett, Mr. Stephens took a northeasterly course to Resting Springs where he remained with the main party during the work at that point and in Ash Meadows and then visited the high mesa known as Table Mountain, after which he passed through Oasis Valley and Sarcobatus Flat, and then turned westerly through Grapevine Cañon and southerly through the northwest arm of Death Valley to Furnace Creek, where he was joined by Mr. Bailey and myself April 11th, as already mentioned. After going with us to Hot Springs in Panamint Valley he proceeded to Borax Flat and Salt Wells Valley, and thence to Olancha near the foot of Owens Lake. From this point he visited Olancha Peak and Monache Meadows, and then joined the several other divisions of the Expedition in Camp Reunion at Lone Pine about the middle of June. His subsequent work was in the north end of Owens Valley (where he met Mr. Nelson) in the High Sierra near Mount Whitney. Mr. Stephens left the Sierra September 2nd and returned to his home in southern California by way of Mohave, Lancaster, Hesperia, Cajon Pass, San Bernardino, Reche Cañon, and Palm Springs on the Colorado Desert, making small but important collections along the route.

The fourth party, consisting of myself, left San Bernardino March 29 and took essentially the same route northward as that followed by the main party—crossing the Mohave Desert from Cajon Pass to Daggett, and thence to Pilot Knob and Lone Willow Spring, and reaching Death Valley by way of Windy Gap. At Daggett I met Mr. Palmer, according to previous agreement. He came in afoot, several days late, having lost his animals at Lone Willow Spring, which accident necessitated a walk of 70 miles over the desert and might easily have cost him his life. He was in very bad condition and was sent home to recuperate. After remaining a month, he rejoined the party in Coso Valley. I was joined at Daggett by Mr. Albert Koebele, an insect collector sent out by the Division of Entomology of the U.S. Department of Agriculture, and by Mr. Fred W. Koch, general assistant. Mr. Koebele remained with the Expedition [approximately eight] weeks when he was recalled to be sent to Australia on a special entomological mission. We left Daggett April [4] and reached Death Valley April [8] where we found Mr. Bailey and Mr. Coville at Bennett Wells, and Mr. Stephens at Furnace Creek. Mr. Coville climbed the Panamint Mountains to join Dr. Fisher and Mr. Nelson, and Koebele and Koch returned at once to Panamint Valley with instructions to wait for us at Hot Springs, where Bailey, Stephens and I joined them ten days later, after visiting Mesquite Valley and crossing the Panamint Mountains through Emigrant and Wildrose cañons. From this point Mr. Bailey accompanied me on an extended trip to Arizona and Utah, returning to California about the middle of June. ~~(The narrative of this trip will be found elsewhere).~~

The fifth party, consisting of the meteorological observer, Mr. Cleary, outfitted at Keeler on Owens Lake and proceeded directly by pack train to Death Valley, where he remained throughout the season (from April 22 to October).

The sixth party, consisting of Mr. E.W. Nelson and Mr. F. Funston, was formed by subtraction from the main party while at Hot Springs in Panamint Valley in April. Mr. Nelson was equipped with a pack outfit with which he explored the east and west range at the head of Panamint Valley (afterward named 'Nelson Range' in his honor), the Grapevine, Inyo, and White mountains, Saline Valley, and the north end of Owens Valley. His subsequent work in the High Sierra [(Plate I)], and in the upper San Joaquin Valley and Coast Ranges, is detailed elsewhere.

The seventh party, consisting of the topographers from the U.S. Geological Survey (Mr. P.V.S. Bartlett and Mr. J.M. Dikeman) was organized as an independent party in Panamint Valley in April [after] the arrival of Mr. Bartlett from the east (by way of Owens Valley). Mr. Dikeman has been on the ground from the first, having gone in with Mr. Bailey early in January. This party worked chiefly in Leach Point Valley, from Pilot Knob to the south end of Death Valley. They also made altitude determinations in Death Valley. They left the Expedition in August.

The eighth party, consisting of Mr. Basil Hicks Dutcher, joined the Expedition at Lone Pine in Owens Valley June 16, and was immediately transferred by pack train to Big Cottonwood Meadows, about ten miles south of Mount Whitney, where a meteorological station was established at an altitude of 3,050 meters (a little above 10,000 feet). Mr. Dutcher remained in charge of this station, assisted by F.W. Koch until October, after which he made a hasty trip to Death Valley and the Amargosa Desert.

Of the parties as originally constituted, the first was merged with the second early in January, and the latter suffered frequent subdivision and subtraction until it ceased to exist after the middle of June. Palmer had been absent since March, as already stated, and Bailey, Nelson, Coville, and the topographers took their departures before the end of April, leaving Dr. Fisher in charge, accompanied by Koebele and Koch, and burdened with the cumbrous outfit of the main expedition, which he finally succeeded in transporting to Owens Valley. The great obstacle to be overcome was the Argus Mountains. [Shepherd] Cañon in this range, through which Mr. Bailey and Mr. Nelson had reached Panamint Valley in January, had been rendered impassable by the great February storm, and Dr. Fisher, assisted by half a dozen men, had the utmost difficulty in getting his outfit through it. Mr. Palmer rejoined this party in May, and it was already camped at Lone Pine when I arrived there the night of June 11.

The 3rd, 5th, 6th, 7th, and 8th parties remained distinct as long as in the field. The 4th underwent no material change until the middle of June, when Mr. Bailey left me to make an important side trip to Death Valley, accompanied by Dr. Fisher.

After establishing the meteorological camp near Mount Whitney in the High Sierra, I left Owens Valley and crossed the Sierra through Walker Pass, accompanied by Mr. Palmer and Mr. Coville ~~(an account of this trip will be found in the itinerary of my trip from California to Utah and return)~~. Mr. Bailey and Dr. Fisher, on returning from Death Valley to Owens Lake the last of the month, followed my route through Walker Pass to Kernville and Havilah, and thence proceeded to Bakersfield and Visalia in the San Joaquin Valley.

Early in July, I was unexpectedly called away on a special mission to the Bering Sea in the interest of our Government, and Mr. Palmer was again placed in charge of the Expedition. ~~The subsequent work in the High Sierra is detailed elsewhere.~~

The main expedition disbanded at Visalia September 19, 1891, after which date Mr. Vernon Bailey visited the coast region at Monterey and Boulder Creek, and the west slope of the Sierra at Auburn and Michigan Bluff, and Mr. Nelson made an extended and successful exploration of parts of the upper San Joaquin Valley, the Carrizo Plain, the Coast Ranges from San Luis Obispo and Morro south to the Santa Barbara plain, and the hills about Ventura and Nordhoff.

MAPS

Previous Maps Of The Region

But two maps worthy of mention cover the area explored by the Death Valley Expedition, namely, the U.S. Engineer Department Map of California and Nevada with parts of Utah and Arizona, and the general map of the Geological Survey of California. Both are based on the work of the Wheeler Survey for the region east of the Sierra, and the California Survey for the region west of these mountains. The only topographic work ever done in the southern part of the Great Basin is that of the Wheeler Survey, the published results of which appeared in the form of small map-sheets. Only a part of the area was covered, and most of the work was a rapid reconnaissance rather than a detailed survey.

Map Accompanying The Present Report

Through the courtesy of Major J.W. Powell, Director, the map accompanying the present report was compiled by the U.S. Geological Survey under the direction of Prof. A.H. Thompson, Geographer. It is based largely, and in the Great Basin region chiefly, on the work of the Wheeler Survey, as all maps must be until additional topographic work is done there. Along the eastern edge of the map, corrections have been made [as a result of] the Powell Survey, and in other places by the Expedition. The position and topographic relations of Mount Magruder, and of Gold Mountain and a few less important places, were determined by the Expedition and for the first time are believed to be correctly given. [Editor's note: This map is not published herein, but it is presented near the very end of the North American Fauna #7 volume as a foldout page, available at https://www.biodiversitylibrary.org/page/25799136#page/7/mode/1up.]

ALTITUDES

The altitudes given on the map are in the main from the Wheeler Survey. Those near the Colorado River are from the Powell Survey; and those in Death and Leach Point valleys, and a few others in the neighborhood, are from determinations made by the topographers detailed by the Geological Survey to accompany the Expedition.

The sources of the elevations recorded in the *List of Localities Visited by the Death Valley Expedition* document (Palmer 1893) in Part II, are therein cited.

Most of the altitudes given in the Itinerary, and in the special reports on mammals, birds, reptiles, batrachians, mollusks, and plants were determined by the Expedition by means of aneroid barometers and are not supposed to be more than approximately correct, owing to the scarcity of base stations for comparison.

All altitudes, except on the map, are given in meters, followed by their equivalents in English feet. These equivalents are stated in round numbers in order to avoid the appearance of a precision unwarranted by the measurements themselves.

C. HART MERRIAM ITINERARY

At 2:30 P.M. on the 29th of March, 1891, I left San Bernardino, California, on horse-back, bound for the Death Valley country and the desert regions of southern Nevada and southwestern Utah. The route lay through Cajon Pass where the first night was spent, and thence northerly across the Mohave Desert. The San Bernardino Plain at this time was green after the winter rains and much of the bench on the east side of the lower part of the pass was covered with the beautiful orange poppy ([*Eschscholtzia*] sp.) the state flower of California, which

covered many acres without a break. The altitude of the San Bernardino Plain near the mouth of the pass is 300 meters (1,000 ft.); that of the summit of the pass is 1,225 meters (4,000 ft.); and of the southern edge of the Mohave Desert at the north end of the pass 1,150 meters (3,800 ft.). Two species of cactus are conspicuous on the San Bernardino Plain, growing in large patches and affording nesting sites for the Cactus Wren ([*Heleodytes*] *brunneicapillus*) and Road-runner (*Geococcyx californianus*), and both range into Cajon Pass. One, a flat branching species (*Opuntia engelmanni*), disappears at an altitude of about 725 meters (2,400 ft.); the other, a tall cylindrical arborescent species, soon becomes scarce, but continues in scattering clumps at intervals nearly all the way through the pass. The chemisal or chemise (*Adenostoma fasciculatum*), perhaps the most abundant and characteristic undergrowth of the Coast Ranges and coastal slope of the Sierra system, is common throughout the cañon. Manzanita (*Arctostaphylos* sp.) begins near the bottom of the cañon at about 675 meters (2,200 ft.) and ranges up to the summit. A prickly leaved scrub oak (*Quercus chrysolepis*) was first seen at about 975 meters (3,200 ft.) and ranged thence up to the summit of the pass. The only tree seen in the bottom of the pass is the sycamore (*Platanus* [*racemosa*]), which was just coming into leaf. Cajon Pass is the type locality of the species. The large-seeded Douglas spruce [sic] (*Pseudotsuga macrocarpa*) which is common in gulches on the west side of the pass, comes down as low as 675 meters (2,200 ft.). In the chaparral in the lower part of the cañon a few Road-runners (*Geococcyx californianus*) and Valley Quail ([*Callipepla*] *californica vallicola*) were seen, while California Jays (*Aphelocoma californica*), [California] Towhees (*Pipilo fuscus crissalis*), House Finches (*Carpodacus mexicanus frontalis*), [Arkansas Goldfinches] (*Spinus psaltria*), tits of the genus *Polioptila*, Black [Phoebes] (*Sayornis nigricans*), Gambel's Sparrows (*Zonotrichia* [*leucophrys*] *gambeli*), [Western] Bluebirds (*Sialia mexicana*), and Audubon's Warblers (*Dendroica auduboni*) were common throughout the pass, and a few shrikes (*Lanius* [*ludovicianus*] *excubitorides*) and Spurred Towhees (*Pipilo* [*maculatus*] *megalonyx*) and a single Mocking Bird (*Mimus polyglottos*) were observed.

The only mammals seen were cottontail rabbits (*Sylvilagus auduboni*) and the California Ground Squirrel ([*Citellus*] *beecheyi*), both of which range throughout the cañon.

Looking north across the Mohave Desert from the summit of Cajon Pass we saw the southernmost basin of the Mohave Desert and a succession of desert ranges beyond, the general trend of which is east and west. The high mountains on both sides of the pass were covered with snow—San Bernardino Mountain on the east and Baldy or San Antonio on the west.

The first indication of the Mohave Desert was seen in a single clump of small Tree Yuccas (*Yucca* [*arborescens*]) on the south side of the summit at an altitude of 1,175 meters (3,850 ft.). The upper edge of the Tree Yucca forest reaches the summit of the pass on the north side, whence an unbroken forest stretches northerly as far as the eye can define its outlines, descending to an altitude of 750 meters (about 2,500 ft.), though the trees are scarce and scattering below 1,000 meters (3,300 ft.). This yucca forest forms a belt around the western part of the Mohave Desert and is mixed with junipers (*Juniperus californica*), *Ephedra* [*viridis*], and sagebrush (*Artemisia tridentata*) on the upper levels to about 1,075 meters or 3,500 feet. The juniper belt is here about 8 miles in width and the yucca belt about 12 miles, though the latter varies considerably with the slope. The Tree Yuccas show to the best advantage and perhaps reach their highest development just below the junipers at an altitude of about 1,075 meters (3,500 ft.) where they average from 5–7 meters (16.5–23 ft.) in height.

In crossing the desert, the Creosote Bush (*Larrea* [*tridentata*]) begins at about 1,025 meters (3,350 ft.) below which altitude it is the dominant bush over the whole of the Mohave Desert except on clayey soils, where it is replaced by greasewoods of the genus *Atriplex*. *Larrea* is the most characteristic bush of the Mohave Desert and of all of the Lower Sonoran deserts of southeastern California, southern Nevada, and Arizona. It is particularly useful as a zone plant because of the ease with which it is recognized at a distance, owing to its color. The stems are blackish, its small leaves are dark green in color and coated with a kind of varnish which prevents evaporation. The whole shrub at a distance is very much darker than any other form of desert vegetation.

The California Ground Squirrel ([*Citellus*] *beecheyi*) ranges northward throughout the juniper belt, but does not occur below and consequently is absent from the desert parts of the Mohave and all other Lower Sonoran deserts. The [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) is common in all parts of the desert and ranges up through the junipers.

The diurnal mammals of the Mohave Desert in addition to the White-tailed Antelope Squirrel already mentioned are the [Desert] Coyote (*Canis latrans* [*estor*]) and two species of rabbit—a jack rabbit (*Lepus* [*californicus deserticola*]) and a cottontail ([*Sylvilagus auduboni*] *arizonae*). The nocturnal forms are characteristic species of the Lower Sonoran deserts generally, namely, two species of kangaroo rats (*Dipodomys deserti* and *D. merriami* [*merriami*]), pocket mice (*Perognathus penicillatus*), scorpion [grasshopper]-mice (*Onychomys* sp.), and two species of white-footed mice ([*Peromyscus*] *eremicus* and [*P. maniculatus sonoriensis*]). Another species of [*Peromyscus*] (a large-eared form of [*P. truei*]) and one or two species of small pocket mice belonging to the restricted genus *Perognathus* are found on the desert ranges and higher levels of the desert, and a five-toed kangaroo rat (*Dipodomys ordii*) is common on the higher gravel benches and sand flats. The small large-eared [Mohave Desert] Kit Fox (*Vulpes macrotis* [*arsipus*]) ranges over the Mohave Desert as well as the other Sonoran deserts of California, Nevada, and Arizona.

The Mohave River was first seen at Victor where it was nearly 200 feet in width and has a beach or flood bed of beautiful white sand covered with large cottonwood trees. The altitude of the desert at this point is 825 meters (2,750 ft.).

At Daggett, I was met by Mr. T.S. Palmer who had been in charge of the Expedition up to this time and who had just come out from the Amargosa country to meet me. He had the misfortune to lose his horses at Lone Willow [Spring] near the foot of Panamint Valley and had walked all the way from Lone Willow Spring to Daggett, a distance of 70 miles, in consequence of which he was in such bad physical condition that he was obliged to leave the Expedition for a month's rest.

Mr. Albert Koebele, an entomologist from Alameda, California, met us at Daggett, having been sent to this point by the Entomological Division of the Department of Agriculture, for the purpose of accompanying us as entomological collector.

On the morning of April 4, we left Daggett for Death Valley with T.G. McGrath as head packer. The route lay to the north-northwest, and the first divide was reached at a distance of about 16 miles from Daggett. The altitude of this divide is the same as that of Cajon Pass, namely, 1,225 meters (4,000 ft.). Looking south toward Cajon Pass, two desert ranges intervene, and the higher peaks of the San Bernardino Mountains covered with snow show plainly on the distant horizon. To the north a maze of high mountains loomed in all directions, most of which we were then unable to identify, though afterward they became familiar landmarks. Telescope Peak, however, was recognized by its great height and by the circumstance that it was completely covered with snow. Pilot Knob or Granite Mountain was also readily recognized. The north slope of the divide on which we camped for the night is a high and gradual slope leading for about 29 kilometers (18 miles) to what is facetiously known as 'Paradise Valley'—a shallow desert basin at an altitude of 1,100 meters (3,600 ft.), containing three dry lakes. This long slope is covered with an open forest of Tree Yuccas precisely like the north slope of the Mohave Desert below the mouth of Cajon Pass. These shallow basins containing dry lakes are characteristic features of the Mohave Desert, which in fact may be described as an aggregation of small basins, separated from one another by ~~the Lost Mountains or Desert Ranges~~ desert ranges and their connecting spurs and each containing one or more dry lakes.

Continuing northward toward Granite Mountain or Pilot Knob by an ascent considerably steeper than that on the south side of Paradise Valley, we reached a sulphur spring known as 'Copper City Wells' southeast of the

base of Pilot Knob, whence the route lay along the west side of that mountain to Granite Wells 6 miles further on. Granite Wells is at the northwest side of Pilot Knob at an altitude of 1,300 meters (4,200 ft.). The summit of the divide on the road between the sulphur spring and Granite Wells is 1,400 meters (4,600 ft.), which is considerably above the upper limit of *Larrea*. A few scattering Tree Yuccas occur on the south side of the divide. Pilot Knob is the most conspicuous landmark in the Mohave Desert. It is an oval cone of red rock with a broad whitish band running all the way around near the summit. We struck the trail of Palmer's lost horses some miles south of Pilot Knob and caught three of them at Granite Wells. Near Pilot Knob we secured the first Horned Rattlesnake (*Crotalus cerastes*) thus far seen. This is the common rattlesnake of the Lower Sonoran deserts and was afterward collected in large numbers. It is locally known by the name of 'Sidewinder' on account of its peculiar habit of moving away with the body broadside toward the observer. Several Burrowing Owls (*Speotyto* [*cunicularia hypogaea*]) were found at Granite Wells. Horned toads (*Phrynosoma* sp.) and several species of lizards are common on the Mohave. The largest of these are the Leopard Lizard (*Crotaphytus wislizenii*), the handsome [Ring-necked] Lizard (*Crotaphytus baileyi*), the saurian-like flower-eating [Desert Iguana] (*Dipsosaurus dorsalis*) and the splendid armor-plated Whip-tail Lizard (*Cnemidophorus* [*tigris*]). A medium-size species with several transverse black bands under its tail, from which it was named the Gridiron-tail Lizard (*Callisaurus ventralis*) was the most abundant species seen. It runs with great rapidity over the hot sands and carries its tail curled up over its back as if afraid of burning it on the surface. Its legs are very long and the knee joints stand up at right angles to the body in a very peculiar fashion. A land tortoise ([*Gopherus*] *agassizii*) inhabits the Mohave Desert, and is eagerly sought after by coyotes and Indians. A large one was captured near Pilot Knob.

The characteristic and most abundant birds of the Mohave Desert are LeConte's Thrasher (*Harporhynchus lecontei*), the Black-throated Sparrow (*Amphispiza bilineata*) and the [Desert] Horned Lark (*Otocoris* [*alpestris arenicola*]). A number of Sage Sparrows (*Amphispiza belli nevadensis*) were observed during the first week of April, but were doubtless migrants on their way north to breed. A few Say's Phoebes (*Sayornis saya*), shrikes (*Lanius* [*ludovicianus*] *excubitorides*), and several Mocking Birds (*Mimus polyglottos*) were seen near Granite Wells~~, and two White-winged~~.

From the divide at Pilot Knob a grand view broke upon us. The High Sierra covered with snow and ice loomed up to the northwest, with many mountains and broken ranges intervening. Telescope Peak, its snowy summit glistening in the sun, was seen in the north about 60 miles distant, and the snow-covered summit of Charleston Peak was dimly visible in the northeast a little more than a hundred miles away; and barren desert ranges loomed up in all directions, and the snow-capped peaks of the San Bernardino Mountains stood out on the southern horizon.

At ~~Granite Mountain~~ Pilot Knob we met with a serious accident, followed by phenomenally good fortune. One of the front wheels of our heavy wagon gave way letting the hub down on the ground. The night before we had passed an abandoned wagon, which to all appearances was utterly worthless. Having no other possible resources, we went back and got this wagon which with a little repairing served to carry our outfit to Lone Willow Spring where the wagon left by Mr. Palmer was found.

From Pilot Knob our route lay in a north-northeasterly direction to Lone Willow Spring. Descending from Pilot Knob through a picturesque cañon with high rocky walls on the northern slope of the Granite Mountains we entered the west end of Leach Point Valley, a narrow east and west valley reaching from near the south end of Death Valley to the Slate Range, where a low divide separates it from the extensive dry lake known as Borax Flat, whose white surface glistening in the sun lay at our left as we descended the north slope of the Granite Mountains. Following Leach [Point] Valley a few miles to the eastward, we turned north and ascended a gradual slope and crossed a low divide separating Leach Point Valley from the south end of Panamint Valley. We then bore strongly to the left and ascended the gravel slope at the east foot of the Slate Range to Lone Willow Spring

where we spent the night of April 6. Before dark we were overtaken by a severe storm which continued throughout the night. It began with a furious wind from the west, which made it necessary to pile heavy rocks on part of our outfit to keep it from blowing away. This wind was soon accompanied by a heavy rain which soaked us to the skin, as we had no shelter. The storm stopped shortly after daylight and the sun came out at 6:30 A.M. The morning was cold, the thermometer registering 45° F at 7 A.M. The clouds soon rolled away and the day was clear with a stiff gale from the west, which continued until after nightfall. The Panamint Mountains were covered with fresh snow that had fallen during the night. We had not been able to see them at all the night before owing to the clouds of dust blown from the desert by the heavy wind.

After filling our canteens with good water at Lone Willow Spring we started at 8 A.M. for Death Valley and spent the day zigzagging through an open cañon known as Windy Gap. Its east end is named Long Valley on the Wheeler map. It was after dark when we emerged from the windings of this cañon into Death Valley and made a dry camp, having traveled 35 miles without water. A [Black-crowned] Night Heron was startled from the rocks on the south side of the cañon where it had undoubtedly sought shelter during the storm—an odd place for such a bird. The only mammal seen during the day was the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]). When we stopped for the night and were feeling about in the darkness for *Larrea* bushes with which to make a fire to cook our supper we saw high up on our left what was at first taken for a very bright star, but which we soon decided was a fire high up on Telescope Peak. It proved to be the camp fire of two members of our party, Dr. A.K. Fisher and Mr. E.W. Nelson, and, as we saw next morning, was more than a thousand feet above the lower line of the snow.

On the morning of April 8, I proceeded north along the west side of Death Valley from the mouth of Windy Gap to Bennett Wells [(Plate II)] where I found Mr. Vernon Bailey who was in charge of the Expedition during Mr. Palmer's absence. Just north of the mouth of Windy Gap we passed Salt Well, a hole containing water which is too salty for drinking purposes, even for the animals. Between Salt Well and Bennett Wells is Mesquite Well, the water of which is drinkable at certain seasons. Here we saw a Mocking Bird and shrike and a flock of White-throated Swifts ([*Aeronautes*] *melanoleucus*). Clumps of mesquite are common along the west side of the valley just west of the salt flat.

Mr. F.V. Coville, botanist of the Expedition, reached Bennett Wells in the evening and reported that Mr. F. Stephens, another member of the Expedition, had just reached Furnace Creek where he had camped to await our arrival. The temperature of Death Valley at this time was warm and comfortable. The next morning, we broke camp. Mr. Coville climbed Telescope Peak to join Dr. Fisher and Mr. Nelson while Bailey and I went to Furnace Creek where we met Mr. Stephens. Our head packer, McGrath, was sent to Daggett with the four-mule team and heavy wagon for a load of feed and provisions. The following morning, April 10, the entomologist, Koebele, accompanied by Koch went back to Panamint Valley and proceeded northward to Hot Springs to await our arrival. At Furnace Creek there is a small ranch known as Greenland Ranch, belonging to Mr. F.M. Smith of San Francisco, being part of the old Borax Company's property [(Plates III and IV)]. It has a fine field of alfalfa irrigated by Furnace Creek, and the irrigating ditches are lined by a few cottonwoods and small fig trees, the latter bearing several crops a year. The property is now taken care of by Mr. James W. Dayton, who also looks after the old Borax Works two miles further north, where our meteorological station was established for the season. The water of Furnace Creek comes out of a large number of hot springs in Furnace Creek [Wash] and disappears before reaching the salt ground in Death Valley. When cooled it is very good. The snow on the east side of the Panamint Range at this date (April 10) came down about half way to Death Valley or fully 1,525 meters (5,000 ft.) below the summit of Telescope Peak. A small reservoir has been dug on Furnace Creek at the upper end of the ranch and is surrounded by a thicket of willows and *Pluchea* [*sericea*]. Several Cinnamon Teal, a Widgeon, an [Eared] Grebe, and a few other birds were killed on this reservoir and a fish hawk was seen there just before dark. Bats of two species ([*Pipistrellus*] *hesperus* and *Nyctinomus* [*mohavensis*]) were common about the reservoir in the evening. A Poor-will (*Phalaenoptilus nuttalli*) was also observed.

The so-called salt ground which occupies much of the bottom of Death Valley outside of the salt flat proper is said to be about 60 miles in length and varies from half a mile to several miles in breadth. In a general way it has the appearance of frozen ploughed ground greatly upheaved by frost and sprinkled by a light fall of snow, blown off from the projections. It is an alkaline clay thoroughly impregnated with rock salt and is everywhere heaved up into odd shaped masses and pinnacles rising from a foot to three or even four feet above the general level of the surface. These pinnacles and projections are so hard that a sledge hammer is required to break them. Many of them are almost pure rock salt and hard and glassy. There are numerous water channels throughout the salt ground, which are white from the deposit of salt. The main channel in particular is full of brine with solid crystalized salt on the sides and bottom, and a layer resembling thin ice on the surface. Looking down into it, it has a greenish white look like ice. The borax ground, which is outside the salt ground, contains borates of lime, potash, and soda and differs totally from the salt ground, being smooth on the surface and soft; it also contains much salt. The lowest part of the valley is a true salt flat, nearly level, and glistening white from the salt and alkali upon it. It is soft and will not support the weight of a horse. In fact, a man walking over it usually sinks to his ankles. A greenish border consisting of a saline plant of the genus [*Allenrolfea*] (until recently known as [*Spirostachys*]) surrounds the salt flat and salt ground, being able to endure more salt in the soil than any other species. Beyond it in many places is a belt of another saline plant (*Suaeda suffrutescens*), with and slightly beyond which grows the singular *Atriplex hymenelytra*, which thrives in more strongly alkaline and saline soil than the other species of the genus, although all of them require a certain amount of these salts. The Creosote Bush (*Larrea* [*tridentata*]) is abundant on the gravel slopes of the southern part of the valley, but is much less common in the northern part where it is restricted to the higher slopes. A line of mesquite, chiefly *Prosopis juliflora*, grows on the west side of the salt flat, beginning a few miles south of Mesquite Well, and extending thence northward. It was in full leaf on the warm sandy soil, but was just coming into leaf on the clayed soils.

The north end of Death Valley is much more barren and dreary than the south, the clay and gravel slopes being mostly devoid of vegetation. A teamster, who had been sent to Pahrump Valley for feed for the horses, arrived in the evening, having made the trip from Pahrump Ranch to Furnace Creek in three days. The wind blew a gale from the south all the afternoon and evening, continuing through the night and until 8 o'clock the next morning, when it was met by a north wind heavily laden with dust and sand from the northwest arm of Death Valley (Mesquite Valley). Heavy clouds hung over Mesquite Valley and the Panamint Range. After the storm passed, we saw fresh snow on the high mountains to the northwest, which had been hidden by the heavy dust rolling down the valley. Just north of Furnace Creek and outside of the Borax Flat is a good deal of what is locally known as self-rising ground. It is a peculiar type of alkaline soil which looks as if it had been raised by yeast like a loaf of bread, and into which one sinks deeply if unfortunate enough to attempt to walk upon it.

The Funeral Mountains in the neighborhood of Furnace Creek are volcanic, and a remarkable crater exists near the head of the cañon. The cañon has been filled at some time with a coarse gravel to a depth of at least 200 feet in places, and the gravel has been cut away in channels by the water, leaving banks and cliffs of gravel and clay rising to considerable heights on both sides.

A Mourning Dove (*Zenaidura macroura*), the first spring arrival, came to Furnace Creek the same day we did, and, as we afterward learned, the species reached Hot Springs in Panamint Valley about the same time. Later it was abundant.

On the morning of April 12, Mr. Bailey, Mr. Stephens, and I left Furnace Creek for the northwest arm of Death Valley, in which we camped about 20 miles north of Furnace Creek. We obtained water by digging in the alkaline soil in the bottom of the valley at a point where there was a sparse growth of coarse sacaton grass (*Sporobolus*), the first grass seen since leaving Furnace Creek. The presence of this grass usually indicates that water may be found by digging. This water while saline and alkaline was still drinkable.

The western half of Mesquite Valley is covered with shifting sand in the form of dunes and ridges, which support a scattering growth of mesquite. Most of this sand undoubtedly came from Death Valley whence it was blown by the hot south winds. Sand storms are the rule here, and Mesquite Valley has a worse reputation than Death Valley proper. The eastern part of the valley consists mainly of self-rising, clayey soil mixed with solid gravel on the higher slopes. There is said to be a salt creek in the northern part of the valley near where the old emigrant train went to pieces.

The north end of Death Valley proper is marked by a high gravel mesa which separates it from the northwest arm, usually called Mesquite Valley. This mesa is 100–150 feet in height and about 1 1/2 miles wide. It comes down from the Amargosa Mountains and stretches obliquely across the neck between Death and Mesquite valleys (from the northeast to the southwest). There is a narrow channel through this mesa on the west side at the foot of the Panamint Mountains through which the drainage of Mesquite Valley, if there was any, might escape southward into Death Valley. The mountains on both sides are dark and barren as in Death Valley proper. The Amargosa Mountains on the east have the appearance of stratification in many places. These mountains and their southward continuation, the Funeral Mountains, are the blackest, barrenest, and most dismal mountains I have ever seen. In the far north, Mount Magruder capped with snow was seen at the head of the valley.

In looking down upon the extreme northern part of the northwest arm of Death Valley from the summit of Mount Magruder, about two months later, we saw what appeared to be numerous hot springs, and a very black volcanic crater on the west side at the base of one of the calico peaks.

The south end of Mesquite Valley widens out into a sort of basin immediately north of a high gravel mesa that separates it from Death Valley proper, on the southwest side of which a long and rather steep slope strewn with boulders leads up to the summit of the Panamint Range. Emigrant Cañon opens into this from the south at an altitude of 900 meters (3,000 ft.).

On the morning of April 13, we broke camp in Mesquite Valley and set out for a spring in Emigrant Cañon which was reached after 13 hours of hard traveling. Our course lay at first westerly across the valley over five or six miles of shifting sand and self-rising ground, and then over several miles of hard gravel to the foot of the slope leading up to Emigrant Gap. This slope is deeply cut into washes by the heavy storms that sometimes break over the Panamint Mountains. It is thickly strewn with big cobble-stones and boulders, which render traveling excessively difficult. Our two burros, though not overloaded, had great difficulty in climbing this slope. Heavy clouds hung over Mesquite Valley and the mountains to the north during the entire day; a south wind blew up the valley, and a southwest wind down the steep slope from Emigrant Gap. All day long we saw whirls and clouds of hot sand rolling about the valley until the air became so full we could not see the mountains on the other side. About the middle of the afternoon we could not even see the valley below—nothing but billows of dust and sand rising and falling and shifting to and fro with heavy storm clouds above. These sand storms seem to be the rule in Mesquite Valley and make it a much more dangerous place than Death Valley proper. Emigrant Cañon does not enter the head of Emigrant Gap, but opens into it through a narrow notch in the high rock wall on the south side. The cañon is narrow and tortuous with rocky walls on both sides. Emigrant Spring is about five miles south of the mouth of the cañon at an altitude of about 1,350 meters (4,400 ft.), or 425 meters (1,400 ft.) above the mouth of the cañon. There are really two springs about half a mile apart, both on the west side of the cañon. The northernmost is marked by a small mesquite tree. The boundary between the Upper and Lower Sonoran Zones in the bottom of the cañon is near the spring at an altitude of about 1,350 meters (4,400 ft.). *Larrea* and the usual Lower Sonoran species come up to this altitude from Mesquite Valley, while five-toed kangaroo rats ([*Dipodomys*] sp.); pocket mice of the restricted genus *Perognathus*; and [Lone Pine] Pocket Gophers (*Thomomys* [*perpallidus perpes*]) begin at this point and range up through the remainder of the cañon. One spring is below and the other above the narrowest part of the cañon, where the walls come close together and are so tortuous that

a zigzag course is necessary to pass through. Close to Emigrant Spring we found a brush watch-hut made by the Indians for concealment when shooting doves and other birds as they come for water. Above the spring were a few grapevines not yet in leaf.

It was so dark before we reached the spring that we gave up all hope of finding it that night and camped without water, but [while] hunting for brush for fire-wood, I accidentally stumbled upon it. Many beautiful flowers adorned the cañon, among which were two species of *Oenothera*, a yellow species and a superb dwarf species having whitish pink flowers fully three inches in diameter, probably *Oenothera caespitosa*.

A good deal of prospecting has been done by miners in this part of the Panamint Mountains and we found numerous evidences of their former presence near the springs. In one place a stone wall and fire-place had been built in front of a large cave, thus making a very comfortable house. Not far distant, a rude assay-furnace had been made against the slope of a huge rock ~~in the form shown in the accompanying illustration~~. Water is so scarce throughout this region that the neighborhood of springs is sure to be much worked by prospectors.

Emigrant Cañon is about 10 miles in length and is highest at the south end where it opens into a small basin about a mile in width by three miles in length at an altitude of 1,575 meters (5,200 ft.) [(Plate V)]. This basin contains no water. Its bottom is covered with *Artemisia spinescens* and shrubs of the genera *Atriplex*, *Dalea*, *Lycium*, and *Ephedra*, with the best grass yet found for our animals. Owing to the great abundance of the small species of *Perognathus* (of which 26 specimens were caught the first night), the name 'Perognathus Flat' was suggested for it by Mr. Stephens. It is near the summit of the Panamint Mountains, on the west side of the divide, and only a short distance north of Death Valley Cañon. Two large rattlesnakes were killed in the cañon by Mr. Stephens at an altitude of 1,400 meters (4,600 ft.). Some interesting pictographs probably made by the Panamint Indians were found on a chalky limestone wall on the east side at an altitude of 1,525 meters or 5,000 feet ~~(see accompanying photograph)~~. On the east side of Perognathus Flat I found two nests of woodrats (*Neotoma* [sp.]) made of splinters of slaty rock six or eight inches in length and an inch or inch and a half in breadth. There were about six or eight bushels of these slate stones in each nest. Woodrat nests are usually hidden by heaps of cactuses, yucca leaves, and other rubbish.

A divide 1,725 meters (5,700 ft.) in altitude separates Perognathus Flat from the drainage of Wildrose Cañon. Horned toads and five-toed kangaroo rats (*Dipodomys* sp.) pass over this divide. True sagebrush (*Artemisia tridentata*) begins on the east side of Perognathus Flat and ranges up over the Panamint Mountains. We descended to Wildrose Spring and then followed its cañon up to the northwest base of Telescope Peak where we camped in some abandoned charcoal kilns that were built here during the mining fever many years ago. It was fortunate that we secured this shelter, for a snow storm soon set in and lasted all night and all the following day. Water was obtained by melting the snow. The charcoal kilns are about seven miles above Wildrose Spring at an altitude of about 2,275 meters (7,500 ft.) and are in the midst of the juniper belt which begins at about 1,925 meters (6,300 ft.). Nut Pine (*Pinus monophylla*), sagebrush (*Artemisia tridentata*), and the green *Ephedra viridis* are common with the juniper. Here we first saw a new species of chipmunk ([*Eutamias panamintinus*]) running about between the snow banks. The range of this species overlaps that of the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) at about 2,300 meters (7,500 feet). A few [Western] Robins (*Merula* [*migratoria*] *propinqua*), [Mountain] Bluebirds (*Sialia arctica*), and [Thurber's] Juncos (*Junco* [*hyemalis*] *thurberi*) were seen. In spite of the snow, a pocket gopher (*Thomomys* sp.), ~~Tamias~~ [a chipmunk] ([*Eutamias* sp.]), and two species of [*Peromyscus*] were captured, and tracks and feathers of the Plumed Quail (*Oreortyx pictus plumiferus*) were seen. Several deserted 'wakeups' [sic, 'wickiups'] of the Panamint Indians were found, together with large heaps of cones of the Nut Pines which they had come here to collect. We climbed to the summit of the range at the north base of Telescope Peak where the snow was too deep to admit further progress. The views from this point were unusually grand. To the east, Death Valley lay at our feet more than 2,425 meters (8,000 ft.) below—a narrow

chasm walled in by high mountains on both sides. Beyond the Funeral and Amargosa Mountains we saw the Charleston Mountains capped in snow, the Kingston Range, and numerous peaks and ranges which lost themselves in the distance. Looking west, Panamint Valley lay at our feet, with the Argus, Coso, and Inyo mountains between us and the High Sierra, which lofty range forms the western horizon and was completely covered with snow more than half way down to Owens Valley. Maturango Peak, the highest point in the Argus Mountains, was also covered with snow. On the west side of the Panamint Mountains where we were, the snow came down to below 2,125 meters (7,000 ft.) and stands in the cañon just above the charcoal kilns. A fine grove of mountain mahogany (*Cercocarpus ledifolius*) reaches up on Telescope Peak as high as 2,725 meters (9,000 ft.). Mr. Bailey climbed high enough on the peak (wading through deep snow) to obtain specimens of *Pinus flexilis*.

On April 19 we descended into Panamint Valley and moved south to Hot Springs near the mouth of Surprise Cañon, where we found our head packer, McGrath, who had returned the night before from Daggett with a load of feed, and the entomologist, Koebele, and Koch, who had been here for some days. Our botanist, Mr. Coville, with his assistant, Mr. Funston, reached Hot Springs the same day, coming down from the mountain, and Dr. Fisher and Mr. Nelson arrived the day following. The Hot Springs are slightly alkaline and saline and are surrounded by a marsh much of which is covered with *Anemopsis*. Both species of mesquite grow here in abundance, and the salt and alkali flat extend south through the bottom of the valley.

Panamint Valley has an altitude of about 300 meters (1,000 ft.) and is hardly less desolate and barren than Death Valley itself. There is no water between Hot Springs and Lone Willow Spring on the south, a distance of 35 measured miles. Killdeer Plover were common on the marshy ground by the Hot Springs, and a flock of Brewer's Blackbirds (*Scolecophagus cyanocephalus*) visited the mesquite near our camp. LeConte's Thrasher and a Black-throated Sparrow were found in the valley. Migrating [Ruby-crowned] Kinglets (*Regulus calendula*), [Western] Gnatcatchers (*Polioptila caerulea* [*obscura*]), Audubon's Warblers (*Dendroica auduboni*), the Ash-throated Flycatcher (*Myiarchus cinerascens*), and the Black Phoebe (*Sayornis nigricans*) were more or less common in the mesquite, most of them on their northward migration. In the lower part of Surprise Cañon we found Rock Wrens (*Salpinctes obsoletus*), the Cañon Wren (*Catherpes mexicanus conspersus*), the black Phainopepla (*Phainopepla nitens*), and a single male [Western] Tanager (*Piranga ludoviciana*)—the first seen. Say's Phoebe (*Sayornis saya*) was tolerably common nesting in the lower part of the cañon ~~and in Salt Wells~~. Nests containing eggs and young were found both large and small. Kangaroo rats (*Dipodomys deserti* and *D. merriami*) were common. Two species of [*Peromyscus*] were common, together with the omnipresent woodrat (*Neotoma* [*desertorum*]). The small [Mohave Desert Kit] Fox (*Vulpes macrotis* [*arsipus*]) ranges throughout the valley, but is difficult to capture. Bats were common about the springs every night and three species were killed, namely, [*Pipistrellus*] *hesperus*, *Nyctinomus*, and *Antrozous pallidus*. The former two were abundant; of the latter a single individual was shot by Mr. Nelson April 21. Another species, the large and handsome [*Lasiurus cinereus*] was found hanging from a willow branch in Surprise Cañon by Mr. Koebele. It was doubtless migrating northward. In the lowest part of Panamint Valley near [the hot springs] there was a shallow lake about two miles in length, another a little further south, besides a small one near Hot Springs. It is likely that these become dry during the summer.

Half a dozen Panamint Indians, including the chief Panamint Tom, were living at the mouth of a small cañon near Hot Springs [(Plate VI)]. The Panamint Indians are excellent shots with the bow and arrow. We saw their boys kill such small birds as gnatcatchers and kinglets in the mesquites at Hot Springs. They have erected brush huts at most of the springs in which they conceal themselves in order to shoot the doves and other birds that come to drink. They catch woodrats and kangaroo rats in a peculiar kind of figure-4 trap, using a flat rock for a dead-fall. They also eat snakes and the larger lizards. The first Chuckwalla seen was in the possession of the chief, Panamint Tom, from whom we purchased it.

At the Hot Springs the Expedition again broke up into smaller parties. McGrath was sent to the mining camp at Darwin for provisions. Stephens left with his outfit for Borax Flat and Salt Wells Valley. Nelson moved north

with a pack train through Cottonwood Cañon and thence across the northwest arm of Death Valley to Grapevine Mountains, where he obtained a new species of mountain sheep. Dr. Fisher took the main outfit through Shepherd Cañon in the Argus Mountains and camped in Coso Valley. Mr. Bailey and I, with McGrath for packer, set out on a long trip bound for the Santa Clara Valley in Utah, Mr. McGrath having returned from Darwin with provisions.

On the morning of April 24 we moved south to Lone Willow Spring where we found a few [Valley] Quail (*Callipepla californica vallicola*) and a pair of Burrowing Owls (*Speotyto cunicularia* [*hypogaea*]). The next morning we continued southerly about eight miles to Leach Point Valley, which we followed easterly to Leach Point Spring, a distance of 24 1/2 miles. Leach Point Spring is the most attractive camping ground we had seen up to this time. It is in a deep cove at the mouth of a cañon on the south side of the valley and is surrounded by hills and bare granitic rock which is much eroded and having a sort of columnar appearance. Here also we found Valley Quail and many doves, 15 of which were shot for supper. The altitude of the spring is about 1,075 meters (3,500 ft.). Leach Point Valley is a narrow east and west valley running from the divide just east of Borax Flat to the south end of Death Valley. Mr. Bailey followed the tracks of a turtle and secured a [*Gopherus*] *agassizii*. The bottom of the valley about two miles west of the spring was covered with beautiful flowers comprising two species of *Eschscholtzia*, an *Abronia*, *Phacelia*, *Delphinium*, *Gilia*, [*Malveopsis*], two or three species of *Oenothera*, a composite having a·lemon-yellow flower resembling a *Hieraceum* ~~or a Krigia~~, along with several other composites, *Salvia* [*columbariae*], and two species of *Dalea*, a *Lycium*, and *Thamnosma montana*. Tracks of wildcats were seen about the spring, and two species of [*Peromyscus*] were trapped there. After spending the night at Leach Point Spring we proceeded easterly over the valley to the south end of Death Valley where we camped at Saratoga Springs. On the north side of Leach Point Valley about 12 miles east of Leach Point Spring are some curious holes containing water, known as 'Owl Holes'. Between Owl Holes and Leach Point Spring is a dry lake, the altitude of which is a little less than 600 meters (2,000 ft.). Just east of this dry lake is a low divide 650 meters (2,150 ft.), from which a gradual slope leads down to the south end of Death Valley. On the west side of Death Valley at this point are some clay hills well shown in the accompanying photograph [(Plate VII)]. We could not cross the alkali flat at this point, but had to make a detour of about three miles to the southward in order to get around to Saratoga Springs which is a deep pool of warm water, containing hundreds of small fishes 1 or 1 1/2 inches in length. There are some large ponds close by on which we found dozens of Coots (*Fulica americana*) and a few ducks. [Tule] Wrens (*Cistothorus palustris* [*paludicola*]) were common in the reeds. Saratoga Springs and ponds lie close to the foot of the southern spurs of the Funeral Mountains, which project as great black rocky promontories. The common desert cactus (*Opuntia basilaris*) was abundant and in full flower, its flowers being purple-red. The arborescent *Opuntia* (*Opuntia echinocarpa*) was just beginning to flower. Its flowers are small, green, and inconspicuous. A number of Rough-winged and Violet-green Swallows were seen about the spring, and a large vegetarian ~~lizard~~ [Desert Iguana] (*Dipsosaurus dorsalis*) was captured. Its stomach contained buds of the flowers of *Cassia armata* and mesquite. A pair of Ravens followed us from Leach Point Spring to Death Valley—an ominous omen.

Leaving Saratoga Springs at 6 o'clock on the morning of April 27, Mr. Bailey and I rounded the south end of the Funeral Mountains and proceeded in an easterly direction across the open basin covered with dunes of shifting sand, known as the Devil's Playground, and struck the Amargosa River, which we followed northerly through the Amargosa Cañon (about 16 kilometers or 10 miles in length) to the point where Tecopa Cañon comes in from the east. Here we emerged from the cañon (a few miles southeast of the Amargosa Borax Flat) and proceeded in a northeasterly direction to Resting Springs where we were met by our packer, McGrath, who had taken the mules through a shorter route, crossing the Funeral Mountains by what is known as 'Ibex Wash'. The Amargosa River rises in the Ralston Desert to the north of Oasis Valley. Its two branches unite at the head of Oasis Valley at an altitude of about 1,225 meters (4,000 ft.) forming a small stream which runs through the valley (about eight to 10 miles). It then sinks, but its bed continues as a dry wash along the west side of the Amargosa Valley to Ash Meadows, and thence on near the east base of the Funeral Mountains through the Amargosa Cañon to the south end of the Funeral Mountains, where it turns abruptly first to the west and then north and enters the south

end of Death Valley near Saratoga Springs. While the greater part of its course is dry, water can generally be found at a few places. At the time of our visit it was a small and shallow running stream (3 or 4 meters wide and 100–150 millimeters in average depth throughout the greater part of the cañon). The distance in a straight line from Saratoga Springs easterly to the lower part of the Amargosa Cañon is 14 kilometers (9 miles). The creek fairly swarmed with the small blue fishes already mentioned as so common in Saratoga Springs. They belong to a very remarkable type related to the genus [illegible, *Arestias*?] inhabiting Lake Titicaca in the Andes of Brazil, and not known from any other part of the world. The stream grew wider and deeper as we ascended as is usual with water-courses in desert regions. The sides of Amargosa Cañon are mostly gravel rock of sufficient solidity to form cliffs, which in places are eroded in columnar form. Just below the point where the head of Amargosa Cañon spreads out to receive Tecopa Cañon it cuts through a mountain of volcanic rock of varied and brilliant colors. Tecopa Cañon contains a small stream of good water. A large Chuckwalla (*Sauromalus ater*) whose stomach was distended with flowers and leaves, but contained no insects, was captured in this cañon. Here we saw a number of [White-tailed] Antelope Squirrels ([*Citellus*] *leucurus* [*leucurus*]), some of which had very small young, living in holes in the gravel cliffs. Among the mesquite in the upper part of the cañon we saw Mocking Birds, Bullock's Orioles, the Western Yellow-throat [Warbler], Say's Phoebe, doves, and Gambel's Quail. It is a singular circumstance that Gambel's Quail ranges westerly from Arizona and southwestern Utah to the Amargosa country, while the [Valley] Quail ranges easterly as far at least as Leach Point Spring. In the cañon of the Amargosa we found for the first time *Atriplex torreyi*, the largest species of the genus, growing in abundance and forming dense thickets in the upper part of the cañon. Both species of mesquite grow there also, particularly in the basin-like enlargement of the cañon at the mouth of Tecopa Cañon.

Resting Springs are a small but fine set of springs of cool water (temperature 68˚ F) on the east side of Borax Flat. In a thicket of mesquite and other undergrowth just below the spring we found a small colony of the Verdin or Yellow-headed Tit (*Auriparus flaviceps*), which here reaches its extreme western limit. These birds make a curious little globular nest with a small hole in one side, suggesting the nest of the [Tule] Wren (*Cistothorus palustris* [*paludicola*]). At Resting Springs there are several narrow grassy flats where both salt grass and sacaton grass grow luxuriantly. There are also clay hills resembling the 'Bad Lands' hills, and stretches of alkaline self-rising ground.

After spending the night at Resting Springs we set out on the morning of April 28 for Pahrump Valley, where we camped at a fine flowing spring on Yount's Ranch. Between Resting Springs and Pahrump Valley we crossed the Kingston Range on which range we found *Yucca macrocarpa* and a small cylindrical branched cactus (*Opuntia* [*ramosissima*]), both of which here find their extreme western limit. Some of the yuccas were in flower. There are several dry lakes in Pahrump Valley, the largest of which we crossed on the way to Yount's Ranch. Mirages were seen during the entire day as usual, and several sand whirls were observed moving about the valley. We caught another Chuckwalla (*Sauromalus ater*) on a small lava hill on the west side of Pahrump Valley where the ~~nigger-head~~ cactus *Echinocactus polycephalus* was common. The west side of Pahrump Valley is comparatively free from *Larrea*, which is entirely absent from the extensive flats in the bottom, covered with *Atriplex canescens* and *A. confertifolia*. A species of *Lycium* is common on the gravel slopes. There are fine fields of alfalfa at Yount's Ranch, and raisin grapes, peaches, apricots, almonds, figs, plums, and bellflower apples do well. There is a fine grove of cottonwood and willow trees at the spring, forming a favorite resort for birds. Four Horned Rattlesnakes (*Crotalus cerastes*) were killed on the desert bottom a few miles south of the ranch. I stepped on one before seeing him, but as he was tightly coiled my weight held him fast, so that he could not strike.

Following the eastern side of the valley southward for about 18 miles after leaving Yount's Ranch, we turned easterly and ascended the gradual slope leading to the low pass over the Charleston Mountains, just north of Mount Olcott or Potosi. The Creosote Bush (*Larrea* [*tridentata*]) is extremely abundant over this part of the valley, covering the gravel slope everywhere up to an altitude of 1,350 meters (4,400 ft.). The altitude of the

bottom of the valley at Yount's Ranch is 875 meters (2,900 ft.). On the gravel slope leading up to the pass *Yucca macrocarpa* begins at about 975 meters (3,200 ft.) and is common between 1,000 and 1,100 meters (3,300 and 3,600 ft.) where it forms a well-marked zone. Mixed with it in its upper part are scattering Tree Yuccas (*Yucca* [*arborescens*]), which latter species becomes more and more abundant in ascending until it forms a true yucca forest in the upper *Larrea* and *Coleogyne* belts, reaching and mixing with the juniper (*Juniperus californica* [*utahensis*]) at 1,525 meters (5,000 ft.) and pushing on 200 or 300 feet higher on the basal slope of the range. The trees here are smaller than those of the Mohave Desert, rarely exceeding 12 or 15 feet in height. *Yucca macrocarpa* on the other hand here attains unusually large dimensions, often standing eight feet above the ground and sometimes reaching 10 or even 12 feet. It never branches like *Y.* [*arborescens*], but has a large irregular trunk, bearing a huge fan-like plume of bayonets at the top~~, as shown in the accompanying photograph~~. A few of them were in flower, but the greater number were not yet in bud. Three Golden Eagles (*Aquila chrysaetos*) were seen hunting among the yuccas, and LeConte's Thrashers (*Harporhynchus lecontei*) and the Ash-throated Flycatcher (*Myiarchus cinerascens*) were tolerably common, and full-grown young of the former species were secured. A large species of scaly lizard (*Sceloporus* [*magister*]) was common in the Tree Yuccas, as in the Mohave Desert. The Black-throated Sparrow (*Amphispiza bilineata*) was common, as was also *Spizella breweri*.

The gravel slope leading up from Pahrump Valley to the divide at Mountain Springs is a very even and gradual slope, facing west or a little south of west, and the rise for the 10 miles averages about 50 meters (200 ft.) to the mile. It is an unusually favorable slope for studying the succession of plant zones. An open cañon full of juniper and Nut Pine leads from the apex of this slope to Mountain Springs near the summit of the divide, and only about two miles distant. Mixed with the junipers and Nut Pines are several species of bushes here encountered for the first time, namely, *Fallugia paradoxa*, *Cowania mexicana*, *Prunus fasciculata*, *Rhus* [*trilobata*], *Ceanothus* [*greggii*], *Amelanchier alnifolia*, *Berberis* [*fremontii*], *Quercus gambelii*, *Garrya* [*veatchii flavescens*], and *Fraxinus* [*anomala*]. True sagebrush (*Artemisia tridentata*) begins at the lower edge of the juniper, and is common throughout the mountains. The small agave (*Agave utahensis*) not previously seen is abundant on the Charleston Mountains in the neighborhood of Mountain Springs, where a number of 'mescal pits' were found. These pits were made by the Indians for the purpose of baking the root-stalks of the agave. The pits average about 4 feet in depth and 12–20 feet in diameter and are covered with hot stones on the bottom. They are then filled with the stalks of the agave and covered over with earth and left until the agave is thoroughly cooked. It is then universally known as 'mescal' by both Indians and Mexicans.

In a cañon just east of Mountain Springs we found a number of large red-buds or Judas Bushes (*Cercis occidentalis*), bearing superb red flowers, together with last year's pods. This species was not observed elsewhere by the Expedition except on the west slope of the Sierra Nevada in California. On the north side of the pass the range rises gradually. On the south side it rises abruptly from a deep cañon to the summit of a high mountain of bare rock, known as Mount Olcott or Potosi [Mountain].

Descending to the east side of the range and looking northward, we were surprised to find a row of lofty, precipitous crags, rising 600 meters (2,000 ft.) or more above the base-level, and stretching away to the northward for many miles. These cliffs are somewhat banded with red, and some hills of brilliant red rock were seen still further to the north. Passing a family of Pahute Indians in one of the gulches at the foot of these cliffs, we continued northerly to the upper of the Cottonwood Springs, where a number of streams of good water come out near the base of the mountains and flow varying distances toward the [Las] Vegas Valley below before losing themselves in the desert sands. Several of these streams were bordered by a scattering growth of small ash trees (*Fraxinus anomala*), the desert acacia (*Acacia greggii*), and the desert willow (*Chilopsis* [*linearis*]), which is not a willow at all but a beautiful flowering shrub. Neither the acacia nor the desert willow were found at any point further west. Gambel's Quail were abundant here, and a few Cinnamon Teal were found in a bed of water-cress in one of the springs. In the evening several bats were shot, among which was one large Hoary Bat ([*Lasiurus*

cinereus]). Both *Yucca baccata* and *Y. macrocarpa* were found on the east slope of the range, but no Tree Yuccas. *Yucca baccata* was in bud only, while numerous flowers of *Y. macrocarpa* were found. *Coleogyne ramosissima* was in full flower on the east slope. Its flowers are yellow.

Between the foot of the Charleston Mountains and [Las] Vegas Valley proper the country is much broken, and just below the lower of the two Cottonwood Springs it is crossed by a low range of hills. East of these hills, the descent to the bottom of [Las] Vegas Valley is long and gradual. [Las] Vegas Valley, like most of the Sonoran deserts, is covered with *Larrea* [*tridentata*] and *Franseria dumosa*, both of which reach an altitude of 1,125 meters (3,700 ft.) on the west side. The handsome pinkish-salmon blossoms of *Sphaeralcea munroana* were excessively abundant, giving color to more than half the valley. Two large species of poppies, belonging to the genus *Arctomecon*, grow in extensive patches in a few places in [Las] Vegas Valley between the lower of the Cottonwood Springs and Las Vegas Spring. One of these, a yellow-flowered species, was collected by Fremont during his famous expedition across the Mohave Desert on his way from California to Utah in 1844, and was the type and only known species of the genus. It was described by the late Prof. Torrey under the name *Arctomecon californicum*. The second species, bearing large and handsome white flowers, proved to be new and has been described as *Arctomecon merriami* by Mr. F.V. Colville (Proc. Biol. Soc. Wash., Vol. VII, p. 66, 1892).

In the bottom of Las Vegas Valley is a huge spring from which a considerable stream of hot but excellent water flows away. On this spring we saw 22 Cinnamon Teal, mostly adult males. The water is utilized to irrigate the [Las] Vegas Ranch, the oldest ranch in this part of the world and one that has proved a great blessing to many a weary traveler, and which was several times used as a point of rendezvous by the Wheeler Expedition. The ranch is now owned by a Mrs. Stuart, and is worked by her two sons and a number of Pahute Indians whom they employ. They raise many vegetables, including potatoes (both sweet and Irish), onions, beets, cabbages, and corn; also considerable fruit of excellent quality. We saw peaches, apricots, almonds, figs, and apples doing well here. There is a fine grove of large cottonwood trees at the spring and many about the ranch.

Communication with the outside world is kept up by means of a road leading southeasterly to Eldorado Cañon on the west side of the Colorado River, whence all their supplies are hauled by wagon.

Leaving [Las] Vegas Ranch on the morning of May 2, we proceeded down [Las] Vegas Wash to the Great Bend of the Colorado River. The upper part of [Las] Vegas Wash is a bad swamp through which it is impossible to drag a wagon. Ours got stuck in the mud about five miles below the upper end of the wash, and we had considerable difficulty in extricating the mules. We finally unloaded the wagon and carried the load up on to the south bank of the wash, where by rolling rocks down and by a good deal of shoveling and hard work we finally made a grade up which the mules dragged the empty wagon. We then kept on the mesa on the south side of the wash for some distance, but were obliged to turn back fully two miles in order to get the wagon around some bad places. Here we found a small bush that we had not seen before (*Petalonyx parryi*). It was a foot or foot and a half in height and had yellowish flowers. Crossing over several very bad places, in the course of which we again had to unload and carry the entire outfit up a steep hill, we finally reached a wash leading down to the precipitous escarpment in the south side of [Las] Vegas Wash. Here we were again obliged to unload and carry our entire outfit down to the bottom. All four of the wheels of the wagon were then locked solid, and the empty wagon was slid down a steep slope 125 feet in height, for which performance our teamster, McGrath, deserves great credit. We camped at this point, probably about two miles below where we left the wash, below which there is no more water. From this point down to the Bend of the Colorado River the wash becomes a dry, open cañon free from obstacles of any kind. In the small ponds in the upper part of the wash we saw many Cinnamon Teal and Coots, and I shot an adult male [*Merganser*] *serrator*. We also saw a Kingfisher there. A [Long-tailed] Chat (*Icteria virens longicauda*) was singing in a clump of mesquite when we awoke the next morning, the first of the species seen during the trip. Mocking Birds and hummingbirds were common. Of the latter, two nests of

[*Calypte*] *costae* were found containing full-fledged young. These nests were in low bushes, one on a *Larrea*, the other on a *Pluchea* [*sericea*]. [Cliff] Swallows (*Petrochelidon lunifrons*) were common in the cañon. The total length of [Las] Vegas Wash is about 15 miles. Moving down to the mouth of the wash we camped on the Colorado River, just below the Great Bend, in one of the most picturesque spots seen by the Expedition [(Plate VIII)]. On the opposite or Arizona side of the river, a range of mountains culminating in Fortification Hill limited the view in that direction. To the south we looked into the upper end of Black Cañon, and to the north the Great Bend of the Colorado River was in the immediate foreground, with the Muddy Mountains and the mountains beyond Boulder Cañon in the distance. Apparently, the whole area between [Las] Vegas Valley and the [Great] Bend of the Colorado [River] on both sides of Las Vegas Wash is filled with irregular barren mountains. The river is bordered by willows and clumps of mesquite, behind which on the Nevada side are sand hills and gravel knolls. A deserted Indian camp occupies an eminence on the south side of Las Vegas Wash where numerous shells of large turtles were found, together with remains of the edible cactus, a species of *Mamillaria*. We remained here one night and then moved around to the sand flat on the north side of the Great Bend. Gambel's Quail was so common in this region that it sprung many of our traps baited with barley. A single white egret was seen on the Arizona side of the river. Several nests were found of the Yellow-headed [Tit] (*Auriparus flaviceps*). They were invariably placed in bushes of *Pluchea* [*sericea*] along the river flats and averaged about five feet from the ground. Some were still empty; others contained three eggs nearly ready to hatch. A nest of the Costa's Hummingbird ([*Calypte*] *costae*), containing two fresh eggs, was found in a *Larrea* bush less than three feet from the ground. Eggs of the Black-throated Sparrow (*Amphispiza bilineata*) were also secured here. [Big] Desert Kangaroo Rats (*Dipodomys deserti*) are common in the sand flats bordering the river, and two species of pocket mice are abundant. One of these (*Perognathus penicillatus*) is found in the sandhills among the mesquite. The other (*Perognathus* [*formosus*]) is equally common in the gravel knolls immediately above the sand. The cheek pouches of this latter species were distended with seeds of the desert plantain (*Plantago* [sp.]). [Grasshopper] mice (*Onychomys* [*torridus longicaudus*]) were also found here. Abert's [Towhee] (*Pipilo aberti*) here reaches its western limit.

Following the bend of the Colorado easterly along the steep face of a high gravel mesa which here forms the north bank of the river to the open space between these mountains and the mouth of Boulder Cañon, the site of old Fort Callville was visited. This was once a Mormon fort and was built at 'the head of navigation' on the Colorado River, in the hope that it would prove a desirable and more convenient 'port of entry' to Mormondom than the usual route from Salt Lake City. It was expected that commodities would be shipped up the Colorado River by steamer to Callville, and could thence be carried by wagon to the colonies in southwestern Utah and eastern Nevada more easily and cheaply than by any other route, but the project failed and Callville was abandoned. The ruin of the old stone fort is still in excellent condition except that the roof and all other wood-work has been removed because of the scarcity of wood. The walls still standing are of solid stone two feet in thickness. Much of the stone is hewn. The old fort measures about 125 feet in length by 40 feet in width. Near it are ruins of numerous smaller stone buildings and walls. Callville Wash leads from this point northerly and northeasterly through the Muddy Mountains nearly to Bitter Spring, whence there is an easy road down to the Virgin [River Valley]. Since it is impossible to take a wagon along the steep face of the cliffs on the north side of the river between Callville and the Great Bend, we were obliged to move ours northward on the west side of the range and strike into Callville Wash higher up, whence we followed the old Mormon road to the Virgin [River Valley].

There is very little river valley at the Great Bend of the Colorado, the mountains coming near on both sides and the slopes being steep. Directly at the Bend, on each side of the river there is a bottom perhaps one-eighth of a mile in width which tapers off rapidly in both directions into a narrow sandy strip bearing clumps of mesquite and thickets of *Pluchea* [*sericea*] and slender willows, with *Baccharis* in places. Callville is about 5 1/2 miles east of the actual bend of the river and is on the west side of the mouth of Callville Wash.

Leaving the Great Bend of the Colorado on the morning of May 5, we proceeded in a northeasterly direction across the Muddy Mountains, following the old Mormon road to Bitter Spring, and reached the Virgin River at 7 o'clock in the evening. The river was high from the melting of the spring snows in the mountains to the northward, and was flowing rapidly over treacherous quicksand. After spending the entire day in crossing the low Muddy Mountains by means of tortuous cañons and washes which offered an easy grade most of the way, we crossed to the east side and camped just at dark on a disagreeable alkali flat covered with *Suaeda* and [*Allenrolfea*]. The altitude of the Great Bend of the Colorado is about 300 meters (1,000 ft.); that of the summit of the pass over the Muddy Mountains is about 750 meters (2,500 ft.); and of Bitter Spring 575 meters (1,900 ft.). Bitter Spring, also known as Poison Spring, consists of several small alkaline and saline rivulets about half way between the summit of the Muddy Mountains and the Virgin River. They run but a few rods before sinking into the earth. Their location is marked by a few mesquites. The desert willow (*Chilopsis* [*linearis*]) is common in parts of the wash, as is a handsome species of *Dalea* bearing rich purple flowers. In the wash near Bitter Spring we found a few of the [Las] Vegas Valley yellow poppies (*Arctomecon californicum*). *Larrea* [*tridentata*] and *Franseria dumosa* pass abundantly over the summit of the divide owing to its low altitude. Several cactuses were common on the Muddy Mountains, among them, the ~~nigger head~~ cactus *Echinocactus* [*polycephalus*]. Four species were in flower, namely, the arborescent *Opuntia echinocarpa* with inconspicuous green flowers, *Cereus engelmanni*, *Opuntia basilaris*, and a *Mamillaria*, all bearing rich red flowers. Another nest of the Costa's Hummingbird was found, containing two fresh eggs. It was placed low down in a bush of *Peucephyllum schottii*. Two nests of the Cactus Wren ([*Heleodytes*] *brunneicapillus*) were seen near Bitter Spring in bushes of *Acacia greggii*. The young had hatched and left the nest, a single bad egg remaining.

The morning of May 6 was hot and oppressive, with no air stirring, and the thermometer was 104˚ F at 10 A.M. Heavy cumulus clouds gathered in various directions, followed by much thunder, vivid lightning, and heavy rain—the first thunder storm of the season. The heaviest part of the rain seemed to fall about the mouth of the Virgin River and over the high mountains to the northeast, but it hardly cooled the air, the thermometer standing at 102˚ F at 3 P.M. We broke camp at 7:30 in the morning, and followed the Virgin River northward, fording it a number of times until the mouth of the Muddy River was reached. We then turned to the left up the Muddy [River Valley] and passed the Mormon town of [Saint] Thomas, which now consists of but three families and a number of large cottonwood trees. Formerly it was a flourishing village. Continuing up the Muddy River Valley, we passed another small Mormon settlement called Overton (seven miles northwest of [Saint] Thomas) and camped a mile further on near the ruin of an old gristmill where Torrey's Greasewood (*Atriplex torreyi*) grows in dense thickets and attains enormous size, some of the bushes being so large that they might almost be described as small trees, measuring 15–18 feet in height with trunks five or six inches in diameter. In these thickets we found a colony of large and handsome snakes of striking colors, the body being cream-colored with broad black rings at frequent intervals. This snake was [*Lampropeltis*] *boylii*. The Virgin River at this time was very high and muddy and flowed swiftly over its quick-sand bed, often spreading out in large waves which followed one another in rapid succession over the broad flats. The water of the Muddy River on the other hand is clear and not particularly high. In the drier parts of both valleys, clumps of mesquite, screw-bean, and acacia (*Acacia greggii*) were common, and no less than six species of greasewoods were found, namely, the saline *Atriplex hymenelytra*, which had not been seen since leaving the Amargosa [Desert], and *Atriplex polycarpa*, *A. canescens*, *A. confertifolia*, *A. lentiformis*, and the huge *A. torreyi*. A large species of *Lycium* (*L. torreyi*) just passing out of flower was also common, and thickets of *Pluchea* [*sericea*] mixed with a species of *Baccharis* were conspicuous along the borders of the marshes. [*Allenrolfea*] and *Suaeda* cover the salt flats where salt grass is abundant, and scattering bushes of *Atriplex hymenelytra* are common. The fragrant *Krameria parvifolia* was common in the drier parts of the valley, together with another and larger species of the same genus not seen previously. The stinking *Thamnosma montana* was also found here, and a rare species of bush (*Mortonia scabrella*) was collected on the banks of the Muddy [River] near Overton. Several cactuses were common on the gravel slopes, particularly *Opuntia basilaris* and *Opuntia echinocarpa*, while *Echinocactus polycephalus* was found in a few places. *Er-*

iogonum inflatum was common on the gravel, generally mixed with *Larrea* and *Franseria dumosa*, both of which are abundant throughout the gravel slopes of the valley. The [Big] Desert Kangaroo Rat (*Dipodomys deserti*) is common throughout the Virgin [River Valley] and the [lower portion of the Muddy River Valley]. The most notable bird seen was Abert's [Towhee] (*Pipilo aberti*), which ranks among the rarer species of North American birds. It was one of the commonest, if not the commonest, bird in the bushes along the Muddy [River Valley]. Gambel's Quail also was very abundant, and dozens crossed the path ahead of our horses. In the marshes bordering the Muddy [River], blackbirds, Coots, and [Tule] Wrens were common. Both Red-[winged] and Yellow-headed Blackbirds were seen. A few Mocking Birds, Western Meadowlarks, Yellow and Pileolated Warblers, and one Long-tailed Chat were seen, and a Wright's Flycatcher was secured. [Western] Blue Grosbeaks (*Guiraca caerulea eurhyncha*) were rather common along the Muddy River Valley, as were Lazuli [Buntings] (*Passerina amoena*), [Yellow-headed] Tits (*Auriparus flaviceps*), and the Desert Song Sparrow (*Melospiza* [*fasciata*] *fallax*). A flock of four [Western] Sandpipers (*Ereunetes* [*occidentalis*]), probably belated migrants, were found and one was secured. On the sand flat east of [Saint] Joseph a nest of the Crissal Thrasher (*Harporhynchus crissalis*) was found in a branching cactus (*Opuntia echinocarpa*). We frightened the bird off and waited till she returned to the nest. The eggs had not yet been laid. The Round-tailed [Ground Squirrel] ([*Citellus*] *tereticaudus* [*tereticaudus*]) was tolerably common on this very same sand flat, but was very wary and difficult to see, coming to the mouth of its holes and chippering without showing its head. The most conspicuous lizards were *Crotaphytus wislizenii* and *Callisaurus ventralis*, and several *Dipsosaurus dorsalis* were seen. Three Horned Rattlesnakes (*Crotalus cerastes*) were killed in the Muddy [River Valley].

The following morning, May 7, we broke camp at the old mill site and followed up the Muddy [River] three miles further to the site of the once flourishing Mormon town of [Saint] Joseph, which now consists of but one family and two bachelors, though it is said that formerly 200 families of Mormons lived here. We were informed that these Mormons supposed they were in Utah and that when they found that they were on the Nevada side of the line and were about to be forced by Nevada officials to pay taxes, they left in a [group] for Utah.

Leaving the Muddy [River Valley] at [Saint] Joseph, we turned easterly and traveled three miles through heavy sand, and then climbed the steep west slope of the high mesa between the Virgin and Muddy [rivers], which mesa is about eight miles in width where we crossed it and breaks down on both sides with a cliff wall about 200 feet in height. Instead of proceeding directly across to the Virgin [River] we continued in a northeasterly direction in order to avoid fording the river so many times as would have been necessary had we followed the main Mormon road. We finally forded it where it is very broad, and followed the east side for about two miles, and then camped for the night on an island in the middle of the river, having traveled only 19 miles. On the high mesa between the Virgin and Muddy [rivers] (altitude 650 meters or 2,150 ft.) Cactus Wrens were so abundant that their abandoned nests were found in nearly every branching cactus along the route. The young had hatched and flown away at the time of our visit. The large barrel cactus (*Echinocactus wislizeni* [*lecontei*]) and the ~~nigger head~~ [cactus] *E*. [*polycephalus*] were common on parts of this mesa. The whole mesa was abundantly covered with Creosote Bushes (*Larrea* [*tridentata*]) and *Franseria dumosa*. On climbing down the steep cliff wall on the west side of the Virgin River, we were astonished to find a dead Gila Monster (*Heloderma suspectum*). It measured 475 millimeters (a little more than 18 1/2 inches) in length, and was very heavy and thickset, with a chunky, stubby tail. Its color was yellowish with black marbling. The day was particularly hard on our animals because of the sandy roads and the very steep hills. In places the mules were unable to drag the wagon, and we were forced to unload and haul it up by the aid of ropes from the horns of our saddles.

On the morning of May 8, we continued up the Virgin [River Valley] passing the Mormon town of Bunkerville in a grove of large cottonwood trees. Bunkerville is only a few miles west of the Arizona line and is considerably larger than [Saint] Thomas, Overton, or [Saint] Joseph. A good deal of fruit is raised there. We camped on the north side of the Virgin [River] about eight miles north of Bunkerville at the foot of the steep hills which lead up

to the Virgin Mesa on the Arizona side of the line. The fording was particularly difficult today and several times we sank in the quicksand up to our saddles.

In the Virgin River [Valley] along the boundary line between Nevada and Arizona we found Black-headed Grosbeaks, [Western] Blue Grosbeaks, Lazuli [Buntings], Bullock's Orioles, [Long-tailed] Chats, Mocking Birds, Crissal Thrashers, LeConte's Thrasher, Ravens, Gambel's Quail, the Black-throated Sparrow, Brewer's Blackbird, Ash-throated Flycatcher, Say's Phoebe, [Yellow-headed Tit], [Prairie] Falcon, doves, Barn Swallows, Rough-winged Swallows, Abert's [Towhee], [Yellow] Warblers, Texas Nighthawks, Marsh Hawks, and Killdeer Plover. A few Western Meadowlarks were heard singing on the flat. Here we saw for the first time the large cylindrical branching cactus *Opuntia* [*acanthocarpa*], growing in company with *Opuntia* [*ramosissima*] from the neighborhood of Bunkerville northward. At the foot of the gravel cliffs we caught [Long-tailed] Pocket Mice (*Perognathus formosus*), [Desert] Woodrats (*Neotoma* [*desertorum*]), and desert mice ([*Peromyscus*] *eremicus*). On the sand flat bordering the river we caught the [Big Desert] Kangaroo Rat (*Dipodomys deserti*), the [Desert] Pocket Mouse (*Perognathus penicillatus*), [grasshopper] mice (*Onychomys* [*torridus longicaudus*]), and the Round-tailed [Ground Squirrel] ([*Citellus*] *tereticaudus* [*tereticaudus*]).

Continuing, we ascended the gravel mesa on the northwest side of the Virgin [River], going up and down several very steep grades before reaching the top of the mesa proper, which according to my barometer is 750 meters (2,450 ft.) in altitude or 700 feet above the river at the point where it was crossed last. A scattering growth of small Tree Yuccas, called by the Mormons 'Joshuas', was found reaching down from the top of the mesa to an altitude of about 675 meters (2,250 ft.), forming a strip along the crest of the mesa not more than a mile or a mile and a half in width. Crossing the mesa, we again descended into the Virgin River Valley at the point where it is joined by [Beaver Dam] Creek in northwestern Arizona, where we found a small stream of clear good water, the first seen during the trip. The flat bordering the lower part of [Beaver Dam] Creek is covered with cottonwood and willows trees, and tall undergrowth consisting largely of *Acacia greggii*, *Chilopsis* [*linearis*], and *Baccharis*, forming a great harbor for birds and the most attractive spot seen in a long time. Dozens of noisy Killdeer Plover were running up and down the muddy banks of the creek, and a multitude of quail and doves inhabited the woods and undergrowth, and were phenomenally tame and free from suspicion. Abert's [Towhee] (*Pipilo aberti*) was as common here as it had been in suitable places along the Virgin [River Valley]. The same is true of the Yellow-headed Tit or Verdin (*Auriparus flaviceps*), many of whose nests were found. Among the other birds found here were the [Western] Tanager (*Piranga ludoviciana*), Hepatic Tanager (*Piranga hepatica*), Texas Nighthawk (which was breeding abundantly), [Black-chinned] Hummingbird (*Trochilus alexandri*), [Desert] Song Sparrow (*Melospiza* [*fasciata*] *fallax*), Ash-throated Flycatcher (*Myiarchus cinerascens*), Say's [Phoebe] (*Sayornis saya*), and Baird's Woodpecker (*Dryobates scalaris bairdi*). A [Western] Red-tail Hawk was killed, whose stomach contained a Round-tailed [Ground Squirrel]. In the evening several bats were shot, most of them being the common small desert species ([*Pipistrellus*] *hesperus*). Frogs, toads, and little fishes were found in the stream, and a large scaly lizard (*Sceloporus* [*magister*]) was common in the underbrush and on dead trees and logs, making much noise in running about over the dry leaves. Both large and small four-toed kangaroo rats (*Dipodomys deserti* and *D. merriami* [*merriami*]) were common. A thermometer registering to 118° F exploded in my saddle-bags today.

The Virgin Mountains on the east side of the valley are high and steep, and show a well-marked band of timber reaching more than half way down to the valley and consisting doubtless of juniper and Nut Pine below, with *Pinus ponderosa* above. The snow still covered a considerable area on the north side of the main peak of the Virgin Mountains and probably fell during the storm of May 6.

Leaving the mouth of [Beaver Dam] Creek on the morning of May 10 we proceeded in a northeasterly direction to and across [Beaver Dam] Mountains and camped on the east slope a short distance below the divide,

going by way of the north pass. A gravel slope rising very gradually from the Virgin [River] Valley leads up to the [Beaver Dam] Mountains and is covered with *Larrea* [*tridentata*] and *Franseria dumosa* up to an altitude of about 1,150 meters (3,800 ft.). The handsome *Yucca baccata* began at about 1,025 meters (3,400 ft.) and extended thence up over the divide, while the Tree Yuccas (*Yucca* [*arborescens*]) occupy a zone on the west slope between 700 and 725 meters (2,300 and 2,400 ft.), forming a belt five or six miles in width. The individual trees here rarely exceed 10 feet in height. The curious little plum (*Prunus fasciculata*) found on the Charleston Mountains was common also on the [Beaver Dam] Mountains. Sagebrush (*Artemisia tridentata*), juniper (*Juniperus californica*), *Berberis fremontii*, [*Kunzia*] *tridentata*, Nut Pine (*Pinus monophylla*), and *Ephedra* [*viridis*] began at about 1,350 meters (4,400 ft.) and ranged up over the summit of the pass at an altitude a little less than 1,525 meters (5,000 ft.), doubtless extending much higher on the mountain sides. A scattering growth of mescal (*Agave utahensis*) was found above 1,150 meters (3,800 ft.). Most of these species range considerably lower on the east slope than on the west slope. [*Kunzia*] was past flowering and the petals had fallen off. *Cowania* on the other hand was in the height of flowering and was simply magnificent, the small trees being so completely covered with the large creamy flowers that the deep green of the foliage was hardly noticeable. *Fallugia* was just coming into flower and its blossoms on long peduncles were conspicuously larger than those of *Cowania*. *Fallugia* hardly averages more than a meter in height while *Cowania* averages two or three meters.

The [Say's Rock] Squirrel ([*Citellus variegatus*] *grammurus*) is common in the juniper belt on the east side of the mountains and ranges down into the [lower] Santa Clara [River Valley] on the east side. A few chipmunks ([*Eutamias*] *dorsalis* [*utahensis*]) were found in rocky places in the upper part of the range. The [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) was common on both sides.

LeConte's Thrasher and Cactus Wren were common in the Tree Yuccas and arborescent cactus on the west slope, and the Cañon Wren (*Catherpes mexicanus conspersus*) was common along the rocky cliffs. The [Woodhouse's] Jay (*Aphelocoma woodhousei*) was common among the junipers, where Scott's Oriole (*Icterus parisorum*) was seen for the first time. Tits of the genera *Polioptila* and *Psaltriparus* were tolerably common, usually moving about in small flocks. The noisy [Piñon] Jay ([*Cyanocephalus*] *cyanocephalus*) was also common in flocks. The Green-tailed [Towhee] (*Pipilo chlorurus*) was common, and a few Spurred Towhees (*P.* [*maculatus*] *megalonyx*) were seen.

Crossing the [Beaver Dam] Mountains we descended into the picturesque Santa Clara River [Valley] hemmed in by high cliffs and mountains, many of which are of brilliant colors, red predominating. The Santa Clara River which empties into the Virgin [River] about four miles from the Mormon settlement of [Saint] George [(Plate IX)] flows partly through lava cañons and partly through high banks of conglomerate and sand-rock baked by the lava. It is bordered by cottonwoods and willows, among which several interesting birds were found, particularly Lucy's Warbler (*Helminthophila luciae*), which was not encountered elsewhere by the Expedition, and *Spinus psaltria arizonae*, of which latter species three nests were found containing fresh eggs. [Vigor's] Wren (*Thryothorus bewickii spilurus*) and Grinnell's Water Thrush (*Seiurus noveboracensis notabilis*), of which the only individual secured by the Expedition was shot on the outskirts of the town of Santa Clara, May 11. The [Black-chinned] Hummingbird (*Trochilus alexandri*) was common, and several nests were found. Extensive fields of alfalfa, grain, and orchards and vineyards were cultivated at Santa Clara.

In descending into the lower Santa Clara [River] Valley from the [Beaver Dam] Mountains the view is unusually comprehensive and grand. On the north the lofty Pine Valley Mountains rise beyond the red cliffs in the foreground, while on the east the Hurricane Cliffs and the plateau rim are plainly visible in the distance, rising several thousand feet above the valley there. The town of [Saint] George is an excellent harbor for birds, being hundreds of cottonwoods, locusts, willows, China trees, *Ailanthus* [sic], mulberry trees, fig trees, osage orange, tamarisks, and several kinds of fruit trees, besides extensive fields of alfalfa and grain, and attractive gardens

with open ditches of running water in the streets. Among the common birds found in these trees in the town were Bullock's Orioles, Lazuli [Buntings], House Finches, Arizona Yellowbirds, [Phainopepla], [Ash-throated] Flycatchers, summer yellowbirds [Yellow Warbler], and [Black-chinned] Hummingbirds, all of which were breeding.

The lower Santa Clara or Saint George Valley in southwestern Utah is notable as forming the extreme northeastern limit of the Lower Sonoran Zone, and many species of mammals, birds, and plants were found here that had not previously been detected within several hundred miles. The [Vermillion] Flycatcher (*Pyrocephalus rubineus* [*mexicanus*]) was secured here, and Abert's [Towhee], Crissal Thrasher, Cactus Wren, black Phainopepla, Lucy's Warbler, [Western] Blue Grosbeak, Black-throated Sparrow, Cañon Wren, Ash-throated Flycatcher, Arizona Linnet, Gambel's Quail, Texas Nighthawk, Mocking Bird, and Yellow-headed tit were all more or less abundant. The [Big] Desert Kangaroo Rat (*Dipodomys deserti*) was not found in the valley, but the small species (*D. merriami*) was common, as was the five-toed species ([*Dipodomys microps celsus*]). The [Canyon] Bat ([*Pipistrellus*] *hesperus*) was very abundant as was the White-tailed ~~chipmunk or~~ Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]). The [Arizona] Cottontail ([*Sylvilagus auduboni*] *arizonae*) also was common, as were skunks of both genera (*Mephitis* and *Spilogale*), badgers, coyotes, raccoons, and foxes. A very dark form of the common House Mouse (*Mus musculus*) was found inhabiting alfalfa fields along the river, and an old nursing female weasel (*Putorius* [*arizonensis*]) was shot on a gravel knoll at the junction of the Santa Clara and Virgin rivers. The singular [Long-tailed] Pocket Mouse (*Perognathus formosus*) inhabits the red sandstone cliffs and gravel hills about the valley, this being the type locality of the species, and the Sage Plains Pocket Mouse (*Perognathus olivaceous*) [sic] inhabits the higher gravel hills. The [Desert] Wildcat (*Lynx* [*rufus*] *baileyi*) is common and very destructive to young lambs. Both species of mesquite (*Prosopis juliflora* and *P. pubescens*) grow on sandy soil in the lower part of the valley. *Larrea* [*tridentata*] and *Franseria dumosa* occupy the lower gravel slopes and southerly exposures, but do not grow as luxuriantly as further south. They find their upper limit on the north side of the valley (south slope especially) at about 1,225 meters (4,000 ft.). Of the species of *Atriplex*, *A. confertifolia*, *A. torreyi*, *A. canescens*, and *A. lentiformis* were common in suitable places along with two species of *Lycium*, *Grayia* [*spinosa*], *Coleogyne ramosissima*, *Salazaria mexicana*, *Ephedra nevadensis*, *Dalea*, *Krameria parvifolia* (which was abundant), *Artemisia filifolia*, *Hymenoclea salsola*, and *Mirabilis* [*laevis*]. Among the cactuses, *Cereus engelmanni*, *Opuntia arborescens*, *Opuntia echinocarpa*, and *Opuntia rutila* were tolerably common. Along the [Santa Clara] River, there was *Populus*, *Salix*, two species of ash (*Fraxinus*), Box Elder ([*Acer negundo*]), and *Robinia neomexicana*. *Pluchea* [*sericea*] is enormously abundant on the river bottoms and forms large thickets.

The characteristic reptiles of the Lower Sonoran Desert of California and Nevada, with a single exception, reach the lower Santa Clara [River Valley] in southwestern Utah, the exception being the large flower-eating [Desert Iguana] (*Dipsosaurus dorsalis*). The Chuckwalla (*Sauromalus ater*) is common in the lava cañons of the lower Santa Clara [River], and also among the sandstone cliffs about Saint George where it is commonly known to the Mormons as the 'the alligator'. An unusually large individual was shown to some Mormons who assured us that it was a 'young' alligator and that the full-grown ones were much larger, which statement may be taken for what it is worth. We were assured also that the Gila Monster (*Heloderma suspectum*) inhabits the valley, but is very rare. The only individual seen by us was found, as already stated, in the Virgin [River Valley] on the west side of the [Beaver Dam] Mountains. *Crotaphytus wislizenii* and *Callisaurus ventralis* were common, and the Whip-tail [Lizard] (*Cnemidophorus tigris*) was very abundant, ranging higher than any other species with the possible exception of *Crotaphytus wislizenii*. Horned toads were abundant. We saw no rattlesnakes, but were informed that the Horned Rattlesnake (*Crotalus cerastes*) occurs in the valley.

We remained in the lower Santa Clara River Valley about a week (May 11–15) during which period thunderstorms were of a daily occurrence either over the valley itself or over the adjacent mountains. On the morning of May 16 we broke camp at Dodge's Spring about a mile from [Saint] George and proceeded in a northerly direction to the Upper Santa Clara River Crossing, about 20 miles north of [Saint] George. Most of the route

was up a rather steep grade, there being a difference of 2,000 feet between the elevation of the lower Santa Clara [River] Valley (3,000 ft.) and the Upper Crossing (5,000 ft.). A few miles after leaving [Saint] George, the road winds up the high cliffs on the north side of the lower portion of the valley in plain sight of [Beaver Dam], Bull Valley, and many other mountains and cliffs whose names we knew not. Most of the cliffs are of red and white sandstone capped with black lava, and the upper cañon of the Santa Clara River is sandstone below, covered with black basalt above. About 10 miles north of [Saint] George we passed through Diamond Valley (altitude 4,800 ft.) which contains a comparatively recent volcanic cone from which a small flow of fresh lava spreads out over a part of that valley. Two very dark colored lizards were found on this lava (*Sceloporus* [*magister*]) and a dark form of *Crotaphytus baileyi*. In ascending the north side of the valley between [Saint] George and Diamond Valley the break between the Upper and Lower Sonoran Zones is sharply marked and occurs at an altitude of about 1,225 meters (4,000 ft.). At this altitude *Larrea*, *Franseria*, *Salazaria*, *Grayia*, and *Krameria* ~~*brevifolia*~~ disappear. These plants would not range up at all above the bottom of the valley, but for the favorable south exposure, which on this slope carries them about 300 meters (1,000 ft.) above their normal level in this latitude. At 1,225 or 1,275 meters (4,000 or 4,200 ft.) the true sagebrush (*Artemisia tridentata*) begins at a point about eight miles north-northwest of [Saint] George and extends thence northward, covering all the region to and beyond the Escalante Desert. The beautiful *Yucca baccata* begins a little below the sage and continues with it to an altitude of 1,450 meters (4,800 ft.), occurring in a well-marked belt a few miles in width, but does not range northward beyond Diamond Valley. The sagebrush belt is fully 10 miles wide south of the Upper Santa Clara River Crossing, and junipers (*Juniperus californica*), Nut Pines (*Pinus monophylla*), *Cowania mexicana*, *Berberis fremontii*, *Prunus fasciculata*, and the large *Lycium* (probably *L. pallidum*), together with an evergreen scrub oak (probably *Quercus gambelii*) occur in greater or less abundance throughout the sagebrush above 1,275 meters (4,200 ft.). *Coleogyne* ranges up to 1,525 meters (5,000 ft.) in places, but is not evenly distributed. *Tetradymia canescens* is common in places among the sagebrush. A large and excessively spiny species of arborescent cactus, which we had not seen before, was found in patches among the junipers near the Upper Santa Clara [River] Crossing. It differs from both *Opuntia echinocarpa* and *Opuntia arborescens* in having shorter and more spiny joints with much more crowded branches, and smooth or nearly smooth fruit. The fruit of *O. echinocarpa* is conspicuously spiny. *Cereus mojavensis* was common in the same locality, growing in compact bunches as usual. Its deep red flowers were fully open at this time. Woodhouse's Jay (*Aphelocoma woodhousei*) was common in the junipers, and *Spizella breweri*, *Oroscoptes montanus*, and *Chondestes grammacus* [*strigatus*] were common in the sagebrush. A few Gambel's Quail (*Callipepla gambeli*) occur about the Upper Crossing, and we were told that a few sometimes reach a little further north where they find their extreme northern limit in the neighborhood of Shoal Creek on the south side of the Escalante Desert.

The next day (May 17) was clear and cool, the thermometer registering 47° F at 6 A.M. We broke camp at the [Upper] Santa Clara River Crossing, and traveled about 25 miles to Shoal Creek where we camped a mile or two above the point where the water disappears in the sands of the Escalante Desert, which desert is universally spoken of by the Mormons of this region as 'The Desert'. From the Upper Santa Clara [River] Crossing our route lay a little east of north to Mountain Meadows and thence westerly across the sage covered southern end of the Escalante Desert to Shoal Creek. Mountain Meadows is a dismal, sage-covered valley about four miles long situated high up in the mountains and hemmed in by hills. The site where the notorious Mountain Meadows massacre was committed in 18[57] is on the divide at the south end of the valley. An open cañon leads down from Mountain Meadows to the south end of the Escalante Desert. The north side of Pine Valley Mountain was entirely covered with snow and much snow was seen on the other mountains during the day. The entire region traversed was covered with sagebrush, more or less mixed with juniper, and sometimes Nut Pine on the side hills. The Escalante Desert is a true sage plain and stretches away to the north as far as the eye can reach. This great desert marks the maximum limit of Great Salt Lake or Lake Bonneville, as shown by Mr. G.K. Gilbert. At its south end it is only five or six miles wide. Patches of *Cowania mexicana* just coming into flower were seen at intervals along the route, together with [*Kunzia*] *tridentata*, which latter was mostly out of flower and ranged up

to an altitude of 1,825 meters (6,000 ft.) At that elevation, we found a new shrub, a curious dwarf prune (*Peraphyllum ramosissimum*) bearing handsome flowers.

So far as birds are concerned, it would have been impossible to detect any difference between these sage plains and those of Idaho or eastern Oregon. *Amphispiza belli nevadensis*, *Oroscoptes montanus*, *Spizella breweri*, and *Chondestes grammacus strigatus* were the common and characteristic species, and several *Poocaetes gramineus confinis* were seen, the first observed during the trip. A single White-rumped Shrike (*Lanius* [*ludovicianus*] *excubitorides*) and a pair of [Mountain] Bluebirds (*Sialia arctica*) were seen. A nest containing four fresh eggs of the Sage Thrasher (*Oroscoptes montanus*) was found in Mountain Meadows, and the male bird was shot on the nest. A number of nests of Brewer's Sparrow were found in the sagebrush. A single [Western] Robin and several [Western] Meadowlarks were seen at Mountain Meadows, as well as two [Desert] Horned Larks (*Otocoris alpestris arenicola*). Between the Upper Santa Clara [River] Crossing and Mountain Meadows, there are a number of patches of scrub oak, mostly *Quercus gambelii*, and occasional patches of evergreen oak (*Q. undulata*). In these places and in thickets of Service Berry (*Amelanchier alnifolia*), the Spurred Towhee (*Pipilo* [*maculatus*] *megalonyx*) was tolerably common. Several Ravens were seen during the day, and a Poor-will (*Phalaenoptilus nuttalli*) was heard on Shoal Creek in the evening. All of the Lower Sonoran lizards had disappeared except the Leopard Lizard (*Crotaphytus wislizenii*), which was common in the sage, and of which several pairs were seen in coition. The [Sagebrush] Lizard (*Sceloporus graciosus*) was tolerably common.

Some smart Mormon boys ran off our horses and mules last night, driving them about six miles through the sagebrush though hobbled, which delayed us in getting started the next morning, and laming several of them so they were not in good condition for several days. Notwithstanding the delay thus occasioned, we broke camp at 9:30 and traveled 30 miles, camping at Sheep Spring in the upper part of the Juniper Mountains, about 15 miles west of the Mormon town of Panaca in Meadow Creek Valley. After passing the small Shoal Creek Mormon settlement of Hebron, we entered a dense juniper forest at an altitude of about 1,825 meters (6,000 ft.) and did not emerge from it during the day, though we traveled through it in a westerly direction at least 20 miles. It is the densest juniper forest I have ever seen and covers the whole of the elevated plateau which I have named Juniper Mountains, a high rolling strip of country ranging from a little above 6,000 feet to about 7,000 feet in altitude, without any high peaks, and extending in a general north and south direction. It seems probable that this elevated tract is continuous with the [Beaver Dam] Mountains on the south and with the Cedar or Piñon Range on the north. There is but little Nut Pine here, the junipers being very pure and unmixed with other species. The Nut Pine is *Pinus monophylla*, not *P. edulis*. [*Kunzia*] *tridentata* is common, as is *Cowania mexicana* on favorable south exposures. *Cowania* was hardly in bud while [*Kunzia*] was just coming into flower, which may be taken as an index to the lateness of the season compared with the [Beaver Dam] Mountains, in which latter locality a little more than two weeks previously [*Kunzia*] had passed flowering and *Cowania* was blooming in the height of perfection. Sagebrush is everywhere mixed with the juniper throughout the Juniper Mountains, and *Eurotia lanata* is common. Scrub oak (*Quercus gambelii*) and Service Berry (*Amelanchier alnifolia*) occur at distant intervals, and *Prunus* [*fasciculata*] and a species of *Ribes* were found near Sheep Spring. On the hills about Sheep Spring a few Yellow Pines (*Pinus ponderosa*) reach their lower limit at about 6,700 feet The red-flowered bunch cactus (*Cereus mojavensis*) was found in scattered clumps throughout the juniper forest and above Sheep Spring as high as 6700 feet, and a cactus with flat pads was found between 1,925 and 2,075 meters (6,300 and 6,800 ft.). In the elevated region about Sheep Spring the Broad-tailed Hummingbird ([*Selasphorus*] *platycercus*) was rather common, and Nuttall's Poor-will (*Phalaenoptilus nuttalli*) was heard about the spring in the evening. A number of small bats were seen and two species of *Myotis* were shot, namely [*Myotis californicus*] and *Myotis* [no name given]. Dozens of doves came to the spring to drink in the evening, and a number were secured for supper. After nightfall we heard a fox bark, probably the Arizona Gray Fox (*Urocyon* [*cinereoargenteus scotti*]). The thermometer fell to 29° F. during the night and our camp pail was covered with ice in the morning. Both Woodhouse's and the Piñon Jay were common in the junipers, and a few Green-tailed [Towhees] (*Pipilo chlorurus*) were seen.

The Spurred Towhee (*Pipilo* [*maculatus*] *megalonyx*) is common in the scrub oak throughout the juniper belt. Two vireos (*Vireo solitarius cassinii* and *V*. [*solitarus*] *plumbeus*) were shot in the same tree near Sheep Spring, along with *Dendroica nigrescens* and *Psaltriparus plumbeus*. A few large [Say's Rock] Squirrels ([*Citellus variegatus*] *grammurus*) were seen among the junipers, and the big-eared True White-footed Mouse ([*Peromyscus truei*]) was caught in our traps, as well as a short-tailed form of [*Peromyscus*]. Several [White-tailed] Antelope Squirrels ([*Citellus*] *leucurus* [*leucurus*]) were seen. The highest part of the divide of the Juniper Mountains is about 6,800 feet and the hills on either side hardly rise more than 200 or 300 feet higher.

Leaving Sheep Spring on the morning of May 19 we soon crossed the divide and continued in a westerly direction, descending the west slope of the Juniper Mountains into Meadow Creek Valley (Nevada), in crossing which we passed through the Mormon town of Panaca, the westernmost of the Mormon settlements. The altitude of Panaca is 1,650 meters (5,400 ft.).

On the west slope of the Juniper Plateau *Yucca baccata* is tolerably common between 1,825 and 1,975 meters (6,000 and 6,500 ft.) and is not yet in bud, though it was flowering freely on the [Beaver Dam] Mountains about 10 days previously. A narrow-leaved yucca, perhaps *Yucca elata*, was found in the same slope in a belt about 300 meters (1,000 ft.) in height between 5,700 and 6,700 feet and was just coming into bud. The compact arborecent cactus found only in the upper Santa Clara [River] Valley was mixed with *Yucca baccata* on the same slope. On this slope *Grayia* reaches 1,925 meters (6,300 ft.) owing to the westerly exposure. *Prunus fasciculata* was common along the higher part of the range and *Lycium andersonii* was found from Meadow Creek Valley up to an altitude of 1,775 meters (5,800 ft.).

Meadow Creek Valley is only about 16 or 18 kilometers (10 or 11 miles) in length, and cañons are at both ends. We were told that Meadow Creek on leaving the south end of the valley flows for about 30 miles through a rock cañon and that the water disappears from the surface before reaching the Muddy River above [Saint] George. Meadow Creek is really the headwaters of the Muddy [River]. Meadow Creek Valley is narrow and has a marshy bottom along the stream. It is the easternmost valley in this part of Nevada, lying between the Juniper Mountains on the east (along the boundary between Nevada and Utah) and the Highland Mountains on the west. The Highland Mountains are a low range covered with sagebrush and scattering juniper, and culminating in Highland Peak, which appears to attain an altitude of about 3,050 meters (10,000 ft.) and is covered with pine timber (*Pinus ponderosa*). Meadow Creek Valley belongs to the Upper Sonoran Zone and is covered with sagebrush except along the marsh. *Grayia* is common among the sage and there are extensive tracts of *Eurotia lanata* covering several acres unmixed with other species. The stunted spiny sage (*Artemisia spinescens*) is common in places below 1,775 meters (5,800 ft.) as is a species of *Lycium*. Junipers come down on both sides of the valley to within a few hundred feet of the level of the bottom, stopping at about 1,775 meters or 5,800 feet on the east side and 1,700 meters or 5,600 feet on the west side. On the alkali flat bordering the flat creek, *Atriplex confertifolia* and *Sarcobatus vermiculatus* are common. A few of the Gridiron-tail Lizards (*Callisaurus* [*ventralis*]), believed to be a new subspecies, occurs in Meadow Creek Valley. The Leopard Lizard (*Crotaphytus wislizenii*) is common throughout, and the Whip-tail Lizard (*Cnemidophorus* [*tigris*]) abounds, and ranges up in the junipers as high as 1,975 meters (6,500 ft.) on the east side (west slope). In the marsh bordering the stream we saw both Yellow-headed and Red[-winged] Blackbirds (*Xanthocephalus* [*xanthocephalus*] and *Agelaius phoeniceus*) and a single Brewer's Blackbird (*Scolecophagus cyanocephalus*). Bullock's Oriole was common in the town of Panaca and the handsome Scott's Oriole (*Icterus parisorum*) was found in the junipers on the east side where it was tolerably common, [but it was] very wary and difficult to approach. This species seemed to be mating at the time of our visit, the males being very uneasy, chasing the females about among the junipers. Mocking Birds (*Mimus polyglottos*) were seen at intervals, both in the junipers and in the valley, and the Ash-throated Flycatcher (*Myiarchus cinerascens*) was common below 1,875 meters (6,200 ft.). A Golden Eagle and several Ravens were noted. Desert Horned Larks were common in the valley and specimens were secured. Not

only do *Larrea* and *Franseria* fail to reach Meadow Creek Valley, but even *Coleogyne* was nowhere to be found. A beautiful species of *Tetradymia* (*T. glabrata*) was first seen on the west slope of the juniper plateau about eight miles east of Panaca, whence it ranges westerly over the valley—and in fact across the state of Nevada, as we afterward ascertained. Crossing Meadow Creek Valley we ascended the slope on the other side to an altitude of about 1,825 meters (6,000 ft.) and camped at Bennett Springs 9 1/2 miles west-southwest of Panaca, where we caught *Reithrodontomys*, *Onychomys*, *Perognathus olivaceous* [sic?], and [*Peromyscus*].

Leaving Bennett Springs on the west side of Meadow Creek Valley at 8 o'clock on the morning of May 20, we traveled 31 1/2 miles and camped at Pahroc Spring, the general course being a little south of west. The Highland Mountains where we crossed it is about 10 miles wide and only 1,950 meters (6,400 ft.) in altitude. Descending on the west side, we crossed a small desert known as Desert Valley, about 10 miles in width which contains a large dry lake. Passing around the south end of this dry lake, we rounded the south end of the Pahroc Mountains, known as Point of Rocks, and then turned northerly along the west foot of this range, which we followed for eight or nine miles to the mouth of a cañon where Pahroc Spring is situated. The water of this spring is good, but there is no wood in the neighborhood except greasewood, though junipers and Nut Pines are common higher up in the Pahroc Mountains and cañons. The altitude of the dry lake in Desert Valley is about 1,525 meters (5,000 ft.) and of Pahroc Spring about 1,775 meters (5,800 ft.). In descending the west slope of the Highland Mountains, we found a species of *Symphoricarpos*, probably *S. longiflorus*, growing in the cañon. On the same slope we found also *Yucca baccata*, *Prunus fasciculata*, *Peraphyllum ramosissimum*, *Cowania*, a *Lycium*, a *Ceanothus*, an *Audibertia*, *Tetradymia spinosa*, *Cereus mojavensis*, and a new compact, arborescent cactus of the upper Santa Clara [River] Valley (*Opuntia* sp.). The handsome cylindrically branched *Tetradymia glabrata* is common all the way across the Highland Mountains, and sagebrush and juniper come down to about 1,825 meters (6,000 ft.) on the Desert Valley side, the juniper stopping first as usual. Juniper occurs abundantly throughout the Highland Mountains and *Pinus ponderosa* was on the higher mountains. On the west side of Desert Valley sagebrush comes down from the Pahroc Mountains to 1,700 meters (5,600 ft.) or lower, and *Cowania mexicana* (just coming into flower) together with a little [*Kunzia*] and *Prunus fasciculata* are mixed with the sage.

Desert Valley is a typical *Eurotia* plain, thousands of acres showing no other plant. Wherever gravel is mixed with the clayed soil *Artemisia spinescens* is common also, and in the flat bordering the dry lake there are patches of *Sarcobatus vermiculatus* and *Atriplex confertifolia*. *Atriplex canescens* is common at various points and *Grayia* [*spinosa*] sometimes forms large patches by itself, scarcely mixed with other brush. A very broad and short-tailed form of the Gridiron-tail Lizard (*Callisaurus ventralis*) was found in Desert Valley, and may be the same as that from Meadow Creek Valley. It is blueish-grey in color. [Desert] Horned Larks were common in the valley, as was *Amphispiza belli nevadensis* and *Amphispiza bilineata*, the latter probably here reaching its northern limit in this region. The most noteworthy fact observed during the day was the presence of a large forest of Tree Yuccas (*Yucca* [*arborescens*]) on the west slope of the Highland Mountains south of the dry lake in Desert Valley, and southeast of Pahroc Spring. This forest seems to be fully 10 miles in length and may stretch away considerably further to the south, and is about five miles in width. A few straggling trees of small size occur also at Point of Rocks, the southernmost spur of the Pahroc Mountains. So far as I know, this constitutes the northernmost range of the Tree Yucca in this part of Nevada, and the high base level of the region explains the unusually high altitude at which the species is here found. *Yucca baccata* is common about Pahroc Spring. There is no water between Bennett Springs on the west side of Meadow Creek Valley and Pahroc Spring—a distance of about 31 1/2 miles (measured by the odometer). The day was chilly and stormy with heavy showers in various directions. The thermometer stood at 52˚ F at 6 A.M. and 68˚ F at 2 P.M., and we had to ride in the teeth of a stiff west-southwest wind—much of the time in the rain. While rounding the south end of the dry lake in Desert Valley it rained so hard we were obliged to stop and unhitch our mules so they [could put] their backs to the storm while we took shelter behind the wagon.

The rain continued throughout the night and a great deal of water fell, as shown by our bread pan, which, though more than 2 1/2 inches deep and not flaring on the sides, was full and running over in the morning, although it stood on level ground where it could not catch any drip. The rain turned to snow and on the morning of the 21st all the mountains in sight were white. We were detained at Pahroc Spring two or three days by the continuance of cold and stormy weather, and spent the time in trapping and botanizing. A number of [Stephens Canyon] Mice ([*Peromyscus crinitus stephensi*]) and the [Long-tailed] Pocket Mouse (*Perognathus formosus*) were caught among the cliffs near the spring and *Perognathus* [*panamintinus panamintinus*] in the valley below. The [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) was obtained and the short-tailed *Sitomys leucopus* [sic] was common among the rocks. The only birds seen about camp were a few beautiful [Mountain] Bluebirds (*Sialia arctica*) and industrious Rock Wrens (*Salpinctes obsoletus*) besides the common [Mourning] Dove (*Zenaidura macroura*), which came to the water in large numbers and afforded us plenty of fresh meat. Woodrats were common in caves in the mountains.

During the first day at Pahroc Spring (May 21) rain, snow, and hail fell at intervals, the thermometer ranging from 36° F at 7 A.M. to 44° F at 3 P.M. and the barometer changing steadily [so as to make] a difference of 300 feet in the altitude due to the effects of the storm.

The Pahroc Mountains are barren and rocky with a sparse growth of junipers covering the higher parts and growing here and there in the cañons.

On the 22nd of May we left Pahroc Spring for Pahranagat Valley, but had not been on the road an hour before we were overtaken by a heavy rain, which caused us to stop and put up the tent for shelter. After the storm was over we moved on to Pahranagat Valley—a distance of 18 miles. Our course from Pahroc Spring lay across the Pahroc Plain, a broad and gradually sloping, nearly level plain which we traversed for about 14 miles in a direction a little south of west, and through the Hyko Range by means of an open cañon about three miles in length that leads into Pahranagat Valley. Our barometers had been so disturbed by the recent storms that the altitudes as determined by them are likely to be 100 or more feet in error. Assuming the altitude of Pahroc Spring to be 1,450 meters (4,800 ft.), the upper end of the cañon through the Hyko Range is 1,400 meters (4,600 ft.) and the lower end on the east side of Pahranagat Valley is 1,275 meters (4,200 ft.). It is thus evident that Pahroc Plain falls a little more than 300 meters (1,000 ft.) in passing westerly from the foot of the Pahroc Mountains to the east base of the Hyko Range, a distance of 14 miles. The Hyko Range is low and barren. The dominant shrub on the Pahroc Plain is *Grayia* [*spinosa*], which in places covers extensive areas unmixed with other plants. In other places the *Grayia* is mixed with *Lycium andersonii*, *Atriplex canescens*, and *Eurotia lanata*. In the cañon leading into Pahranagat Valley from the east we found a curious mixture of northern and southern plants, [*Kunzia*] and *Symphoricarpos* growing close to *Larrea* [*tridentata*] and *Hymenoclea salsola*. *Larrea* grows here in scattered patches on favorable slopes, along with its inseparable companion, *Franseria dumosa*. *Coleogyne* is altogether absent. *Atriplex confertifolia* and *Sarcobatus vermiculatus* are very abundant in the lower part of the wash and hence throughout suitable soils in Pahranagat Valley. *Suaeda* also is common in the valley below 1,275 meters (4,200 ft.). The transition from the Lower to the Upper Sonoran Zone takes place in Pahranagat Valley, the southern end of which is occupied by a tongue of the Lower Sonoran Zone.

We remained in Pahranagat Valley five days, visiting various points of interest, including Pahranagat Lake at the extreme south end of the valley. The south end of the main valley proper is about four miles north of Pahranagat Lake, where it is stopped by a lava flow through which the stream has cut a short cañon about 1/8th of a mile long. Below this the valley immediately expands into a second marshy basin in the lower part of which Pahranagat Lake is situated, surrounded by tule marshes and meadows of salt grass. Pahranagat Lake is a little over 1 1/2 miles in length and contains drinkable water. Below the lake is a springy marsh leading to the terminal cañon at the neck of which a small pond is situated. The water disappears at this point. The gravel bench at the

east foot of the Hyko Range actually reaches the shore of the lake. About 4 1/2 miles below Pahranagat Lake a low divide (altitude 1,150 meters or 3,800 feet) separates the south end of Pahranagat Valley from the broad cañon leading thence southward toward the upper Muddy [River]. A narrow cañon cuts through this divide on the west side. Looking south from the divide, a row of high precipitous cliffs is seen fronting the cañon on the east side, at the foot of which a gravel slope stretches away to the south for many miles, covered with *Larrea* and *Franseria*. *Coleogyne* comes up this slope and over the divide, but does not extend up into Pahranagat Valley proper, although it is common on the gravel slope on the west side of the valley at the foot of the Pahranagat Mountains between 1,275 and 1,500 meters (4,200 and 4,900 ft.). *Larrea* is abundant and evenly distributed over the gravel benches and slopes at the south end of the valley where it is mixed with both species of *Dalea*—the large blue-flowered *D. fremontii*, and the smaller glandular purple-flowered *D. polyadenia*. *Atriplex polycarpa* occurs in the flat below the lake but was not found elsewhere. The [Eared] Grebe (*Colymbus nigricollis californicus*) was shot on Pahranagat Lake in fine breeding plumage, and many others were seen together with Coots (*Fulica americana*), ducks of several species, and [Spotted] Sandpipers (*Actitis macularia*). Red-winged Blackbirds (*Agelaius phoeniceus*) were common, and two [Osprey] were seen. One of the latter was killed by mistake for an owl after dark as it hovered over our camp-fire. A few stunted Tree Yuccas (*Yucca* [*arborescens*]) grow along the upper part of the gravel slope of the east side of the south end of the valley. The handsome black and white ringed snake ([*Lampropeltis*] *boylii*) was captured, like those secured at the old mill near Overton on the Muddy [River], and [Horned Rattlesnakes] (*Crotalus cerastes*) were said to occur, though we did not find any. A number of large hot springs of very clear water [occur] in the southern part of Pahranagat Valley and pour their waters into the stream that traverses the valley. In one of these, the temperature of which was 97° F, we caught some small fishes and snails, among which were living specimens of the very rare *Tryonia* previously known from fossil specimens only. Dr. William H. Dall, to whom these specimens were submitted, writes as follows respecting this species: "A good many years ago a curious little fossil shell was discovered on the Colorado Desert in the Pacific [Railroad] explorations, and it was named *Tryonia* by Dr. Stimpson. Its relations have always remained a puzzle and have caused much discussion. I have always felt that if the brooks and springs which run towards the desert and are lost in the sand were followed up, in some one or more of them we would likely find some of these fossils still living. In a parcel of shells from the Death Valley Expedition collected in a warm spring in the Pahranagat Valley, Nevada, by Dr. Merriam, recently sent over to us, I am delighted to find a few specimens containing the dried animal of this long sought, presumably extinct species. This will enable us to settle a number of mooted questions".

Tetradymia spinosa and *T. glabrata* are common in suitable places in Pahranagat Valley, whence they range up to 1,650 meters (5,400 ft.) on the Pahranagat Mountain slopes. *T. glabrata* was beginning to flower at the time of our visit. *Grayia* [*spinosa*] was abundant on the gravel slopes and on the dry gravel in the bottom of the valley, where it was in fruit. It runs up on the east slope of the Pahranagat Mountains to 1,650 meters (5,400 ft.). *Krameria parvifolia* and *Lycium andersonii* were common also on the dry gravel. *Salazaria mexicana* was not seen in the valley proper, but occurs on the divide south of Pahranagat Lake and on the west side of the valley at the foot of the Pahranagat Mountains. The same is true of *Dalea fremontii* and *Coleogyne*. *Dalea polyadenia* is common on gravel soil throughout the lower gravel benches up to 1,375 meters (4,500 ft.). *Menodora spinescens* and *Artemisia spinescens* are common in the higher parts of the valley, the former heavily laden with fruit. *Menodora* was found with *Dalea fremontii* on the divide south of Pahranagat Lake. The cactuses that were flowering plentifully at the time of our visit are *Opuntia basilaris*, *O. echinocarpa*, another species bearing red flowers, and *Cereus engelmanni*. The ~~nigger head~~ cactus *Echinocactus polycephalus* was found in a few rocky places but was not in flower. *Eriogonum inflatum* was also common on gravel soil. A handsome *Penstemon* having large and showy wide-mouthed whitish and pale purple flowers was common in one place in the lower part of the valley.

The marshes and sloughs of the valley afford excellent nesting sites for several species of water birds and waders. The Cinnamon Teal (*Anas cyanoptera*) was common. Several Mallards (*Anas boschas*) were seen, and

also the Ruddy Duck (*Erismatura rubida*), and other species which we were unable to identify. Coots were common, and a small rail, either *Porzana carolina* or *Rallus virginianus* (probably the former) were frequently heard among the reeds and tules. Several Bitterns (*Botaurus lentiginosus*) and Killdeer Plover (*Aegialitis vocifera*) were tolerably common. A few Gambel's Quail (*Callipepla gambeli*) were breeding along the southern half of the valley, but were shy, thus differing widely from those of southwestern Utah and northwestern Arizona. The [Prairie] Falcon (*Falco mexicanus*) breeds along the cliffs, both the [Western] Blue and the Black-headed Grosbeaks (*Guiraca caerulea eurhyncha* and [*Habia*] *melanocephala*) were common and breeding, as were Lazuli [Bunting], and the [Long-tailed] Chat and Mocking Bird. The Black-throated Sparrow (*Amphispiza bilineata*) was also common, and the [Tule] Wren (*Cistothorus palustris* [*paludicola*]) was breeding abundantly in the tules.

Among the mammals of Pahranagat Valley observed by us were the coyote (*Canis latrans* [*estor*]), gray fox (*Urocyon* [*cinereoargenteus scotti*]), woodrats (*Neotoma* [sp.]), desert harvest mice (*Reithrodontomys* [*megalotis megalotis*]), [Sonora white-footed mice] ([*Peromyscus maniculatus sonoriensis*]), [grasshopper] mice (*Onychomys* [*torridus longicaudus*]), voles ([*Microtus nevadensis*]), two species of *Perognathus* (*P. formosus* and *P.* [*panamintinus panamintinus]*), two kangaroo rats (*Dipodomys merriami* [*merriami*] and [*Dipodomys microps occidentalis]*), a pocket gopher (*Thomomys* [*perpallidus aureus*]), the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]), a jack rabbit (*Lepus* [*californicus deserticola*]), a cottontail ([*Sylvilagus auduboni*] *arizonae*) and a badger (*Taxidea* [*taxus berlandieri*]). We were told that wildcats and spotted skunks were tolerably common; and a [Long-eared] Bat ([*Myotis*] *evotis*) was caught in a deserted house in the evening.

On the morning of May 26 we broke camp about the middle of Pahranagat Valley and proceeded westerly across the Pahranagat, Timpahute, and Desert mountains, and camped on the summit of the latter range a little north of Summit or Mud Spring, having traveled 31 1/2 miles. The animals were so much exhausted that they were not able to drag the wagon on to the spring, so we were obliged to make a dry camp. Bailey and I rode on to the spring and found a coyote there. The water was muddy and poor. From the middle of the Pahranagat Valley to the summit of the range is 12 1/2 miles. We saw Charleston Peak far to the south and covered with snow from both the Pahranagat Mountains and the Timpahute Mountains. Timpahute Peak was covered with snow also. Tree Yuccas form an extensive forest on both slopes of the Pahranagat Mountains and on the Timpahute and Desert mountains. The summit of the pass over the Pahranagat Mountains is 1,825 meters (6,000 ft.), while that of the pass over the Timpahute Mountains is 1,750 meters (5,750 ft.). On the west side of Timpahute Valley at the east foot of the Timpahute Mountains the yuccas descend as low as 1,475 meters (4,800 or 4,900 ft.) or nearly to the level of the valley.

On the Pahranagat Mountains *Symphoricarpo*s, juniper, *Berberis fremontii*, *Cowania*, [*Kunzia*], *Fallugia*, and *Rhus trilobata* are common, mixed with true sagebrush (*Artemisia tridentata*) and in places with *Artemisia* [*spinescens*].

The principal plants in Timpahute Valley (altitude 4,700 ft.) were *Atriplex confertifolia*, *Artemisia spinescens*, *Lycium andersonii*, *Malvastrum*, *Tetradymia glabrata*, *Menodora* [*spinescens*], *Hymenoclea salsola*, *Eurotia lanata*, and *Atriplex canescens*, with a little *Grayia*. Neither *Larrea* or *Franseria* enter the valley at all.

While crossing Timpahute Valley a small sparrow flew up and sang in the air. Not recognizing it, I shot it and was delighted to find an adult *Peucaea cassini* in worn breeding plumage, the only specimen of the species secured by the Expedition, but I suspect that I saw others in the southern end of Pahranagat Valley. *Opuntia* [*ramosissima*] grows on both slopes of the Timpahute and Desert mountains—the first place it has been seen since leaving the Virgin River Valley near the mouth of [Beaver Dam] Creek. Several large and rare [Desert Pallid] Bats (*Antrozous pallidus*) were shot in the evening at the foot of a high sandstone cliff at the summit of the pass over the Timpahute Mountains. This pass is really between the Timpahute and Desert mountains, the name

Timpahute being applied to that part of the range north of the pass, while the name Desert Range is restricted to the part south of the pass. Looking southwest from near the divide we looked down on Emigrant Valley, which contains a large dry lake that was completely covered with water from the heavy rains that fell during the afternoon.

On the morning of May 27 we visited Mud or Summit Spring, where we filled our canteens with poor water, and proceeded thence southwesterly skirting the southeast edge of Emigrant Valley, and thence southeasterly along the base of the Desert Range and over the low divide known as Hungry Hill Summit, and on along the base of the Desert Range to Quartz Spring, which is in a side cañon about 1/2 mile from the valley. It is a deep dug hole and the water is dirty and tastes bad. The cañons above were searched in vain for another water hole. Quartz Spring is 22 miles south of Summit Spring and 29 miles north of Indian Spring at the north base of the Charleston Mountains. Summit Spring is 33 miles from Pahranagat Valley. On the summit of the pass in the saddle between the Timpahute Mountains and Desert Range, the following plants were found, all of them reaching up the west slope from Emigrant Valley: *Coleogyne ramosissima*, *Lycium andersonii*, *Atriplex canescens*, *Tetradymia spinosa*, *T. glabrata*, *Ephedra olivacea* [sic], and *Malvastrum*. Near the spring we found a little [*Kunzia*], *Symphoricarpos*, and *Yucca baccata*. There is but little true sage (*Artemisia tridentata*) on the divide, but *Coleogyne* reaches and passes slightly over the summit. Tree Yuccas pass over the divide and down to the edge of Emigrant Valley, where they descend to 1,575 meters (5,200 ft.). They form a broad zone along the west slope of the Desert Range, and extend thence completely around the south end of Emigrant Valley. Continuing southerly, they pass over the divide at Hungry Hill Summit (altitude 1,775 meters or 5,800 ft.), and thence down over the north arm of Indian Spring Valley where they become smaller and more scattering. The commonest plants in the bottom of Emigrant Valley are *Artemisia spinescens*, *Eurotia lanata*, *Atriplex confertifolia*, and *A. canescen*s. *Tetradymia spinosa* and *T. glabrata* are common a little above the bottom level. Five-toed kangaroo rats ([*Dipodomys* sp.]) are common in the valley and range up to at least 1,675 meters (5,500 ft.) on the slope at the foot of the Desert Range. The dry lake in the bottom of Emigrant Valley, which was covered with water the previous evening, was more than half dry. The level of the bottom of that valley is about 1,525 meters (5,000 ft.) whence the gradual ascent to the south leads to Hungry Hill Summit (altitude 1,775 meters or 5,850 ft.). The Desert Range bifurcates at this point, the main range giving off a branch on the west side which reaches southerly nearly parallel to the main range. Hungry Hill Summit is a low saddle on the branch range near the point of bifurcation. The two ranges enclose the north arm of the narrow and straight Indian Spring Valley, which is about 35 miles in length and slopes to the south where it opens into Indian Spring Valley proper, at the foot of the Charleston Mountains. South of the dry lake the valley rises about two hundred feet to Indian Spring.

The view to the south from the head of the north arm of Indian Spring Valley is particularly fine. Looking down the narrow valley between the barren, rocky walls of the Desert Range, Charleston Peak looms up in the distance, its summit covered with snow. Near the foot of the valley is a large alkaline playa or dry lake, whose whitish surface reflects the light and glistens like a body of water. Nearby are several isolated masses of volcanic rock which seem like large islands in the distance. In the immediate foreground the bottom of the valley is covered with a sparse growth of Tree Yuccas and of *Yucca macrocarpa*, along with the usual desert brush.

True sagebrush (*Artemisia tridentata*) begins on the north side of Hungry Hill Summit and ranges south into the upper part of the north arm of Indian Spring Valley. Mixed with the sage in greater or less abundance are juniper, *Peraphyllum*, *Coleogyne*, *Cowania*, *Fallugia*, [*Kunzia*], and *Berberis fremontii*. The Creosote Bush (*Larrea* [*tridentata*]), which covers the whole of Indian Spring Valley proper, extends northward in the north arm, becoming less and less abundant, and finally growing in isolated patches on favorable south and southwest exposures until it reaches an altitude of 1,525 meters (5,000 ft.) or even a little higher. *Opuntia* [*ramosissima*], *Echinocactus polycephalus*, *Cereus engelmanni*, and a slender spined *Opuntia* with flat elongated pads and yellow flowers were common along the base of the Desert Range, particularly in the neighborhood of Quartz Spring. The altitude of Quartz Spring is 1,575 meters (5,200 ft.); that of the bottom of the valley opposite, 1,450 meters

(4,750 ft.). The [White-tailed] Antelope Squirrel was common all along the Desert Range, and the [Canyon] Bat ([*Pipistrellus*] *hesperus*) was killed at Quartz Spring in the evening. Cottontail rabbits also were seen there. A Shoshone Indian and his squaw, with whom we exchanged some dried apples for piñon nuts, were found at the spring, where they had several ponies. They told us that [desert] bighorn sheep inhabit the higher parts of the Desert Mountains, and were common in the mountains south of Pahranagat Lake.

The next morning we left Quartz Spring at 7:30 and reached Indian Spring at the foot of the Charleston Mountains at 5:30 P.M., having traveled 30 miles. After watering the animals and filling the canteens at Indian Spring, from which a small stream of good water flows a short distance into the valley, we turned westerly and traveled three miles further, camping at some springs of fair water surrounded by considerable mesquite (*Prosopis juliflora*). The springs at this point, like many of the springs in the desert country, occupy the summits of high knolls, which they have built up in the course of time. Some of these are so boggy that they will not bear the weight of a man; others are solid. Indian Spring Valley proper extends in an east and west direction, opening into the north arm of [Las] Vegas Valley on the east, and leading down into Ash Meadows on the west. Its average width is about five miles, and it is completely separated from Pahrump Valley by the Charleston Mountains. The dry lake in the southern end of the north arm of Indian Spring Valley (altitude 1,025 meters or 3,350 feet) is fully 12 miles in length and reaches south to within six or eight miles of the base of Charleston Peak. It consists chiefly of alkaline mud, with one stretch of self rising ground covered with *Suaeda suffrutescens* and *Atriplex confertifolia* and *canescens*. Large parts of the dry lake are absolutely bare and devoid of vegetation, as are the black and gloomy promontories that extend into it from the Desert Range, which is south of Quartz Spring and is almost as dark and barren as the Funeral Mountains. *Larrea* surrounds the dry lake, and *Krameria parvifolia* and the blue-flowered *Dalea fremontii* are common over most of the *Larrea* areas. In the neighborhood of the dry lake are several stretches of flat black pebbles either entirely devoid of vegetation or covered with a sparse growth of the wiry *Chorizanthe rigida*.

Tree Yuccas come down from Hungry Hill Summit, covering the north arm of Indian Spring Valley to an altitude of about 1,225 meters (4,000 ft.). *Yucca baccata* and *Yucca macrocarpa* descend to about 1,375 meters (4,500 ft.).

The Ash-throated Flycatcher is common among the Tree Yuccas and the Black-throated Sparrow is abundant throughout [Indian Spring Valley]. A nest belonging to the latter contained three eggs and was found in a greasewood bush (*Atriplex canescens*).

The Leopard Lizard (*Crotaphytus wislizenii*) was common throughout [Indian Spring Valley], and females were obtained containing large eggs covered with coreaceous shells measuring 12 or 15 millimeters in length. The females of this species when containing eggs approaching maturity undergo a peculiar change of coloration which renders them very conspicuous. The whole tail becomes deep salmon red in color, deepest below, and salmon-colored spots appear on the sides and sometimes unite to form transverse stripes. They were first seen in this condition on the plain south of Pahroc Spring, since which they have been observed every day. This development of color in the female at the close of the breeding season is unusual and contrary to the general rule, for it is the male in most lizards which assumes a peculiar coloration during this period. The males of *Crotaphytus wislizenii* were not observed to undergo any change of color. The salmon color of the female is not developed until sometime after coition—not until the eggs have attained considerable size. The stomach of one killed today contained a mass of flowers of the salmon *Malvastrum*.

A large species of *Lycium* not seen before is common in Indian Spring Valley. It is a spiny species bearing large roundish leaves. At our camp this evening we heard several [grasshopper] mice (*Onychomys* [*torridus longicaudus*]) sing after dark. Their note is a single lisping whistle, as if made by drawing in the breath.

The whole of the north end of the Charleston Mountains is covered with fresh snow which reaches down about 600 meters (2,000 ft.) below the summit of the main peak, on the north side of which a heavy mass of deep permanent snow is easily distinguishable from that which has recently fallen.

The wind blew a gale and a half from the southwest all night long, and the morning was chilly with heavy clouds in all directions and some rain. The thermometer registered 55° F at 10 A.M.

On the morning of May 29 we broke camp at 7:30 A.M. and traveled westerly through Indian Spring Valley for 20 miles and then turned southwesterly through a cañon about two miles in length, beyond which we continued in the same direction for about nine miles and camped in a big dry lake at 7:30 P.M., having traveled 31 miles. This dry lake is on the east side of Ash Meadows.

Indian Spring Valley is a narrow east and west valley averaging six or eight miles in width and bounded by the Charleston Mountains on the south and a barren range 600 to 900 meters (2,000 or 3,000 ft.) above the valley level on the north. The base of this latter range forms the north boundary of the Lower Sonoran Zone in this part of Nevada, the Creosote Bush (*Larrea* [*tridentata*]) stopping at its base. Indian Spring Valley is nearly level, rising very gradually to the west for 17 miles beyond Indian Spring where a low divide (1,225 meters or 4,000 feet in altitude) separates the imaginary waterflow between Indian Spring on the east and Ash Meadows on the west. Beyond this divide the valley curves to the northwest, rising by a gradual slope to the foot of Table Mountain where it ends abruptly, perhaps 12 or 15 miles northwest of the lowest part of the valley. An arm of the Charleston Mountains, which forms the southwestern boundary of Indian Spring Valley, is cut through by a cañon about two miles in length, opening upon a plain that slopes gradually down to Ash Meadows and may be considered a part of the Amargosa Desert. The east end of this cañon is 22 miles west of Indian Spring, and its altitude is 1,075 meters (3,500 ft.). The fall in the cañon is 150 feet. Nine miles west of the cañon is a large dry lake containing much self-rising ground and was difficult to cross, with clumps and lines of mesquite about, near one of which we camped. In a slight depression we found a little muddy alkaline water, which sufficed for our thirsty stock. LeConte's Thrasher, the Black-throated Sparrow, and the Ash-throated Flycatcher were found in Indian Spring Valley. The Tree Yucca does not descend into the valley, being restricted to the north arm, but *Yucca macrocarpa* grows sparingly throughout the higher slopes above an altitude of about 1,175 meters (3,900 ft.) and is common over the low western divide (4,000 ft.), whence it continues westerly along the south side of the valley to the cañon, beyond which it was found skirting the higher parts of the west or Amargosa slope. Mixed with the *Larrea* and *Franseria dumosa* in Indian Spring Valley are *Menodora spinescens*, *Hymenoclea salsola*, *Salazaria mexicana*, *Lycium andersonii*, *Krameria parvifolia*, and a species of *Dalea*. A few stinking shrubs (*Thamnosma montana*) were found, and *Chorizanthe rigida* was common on the flat beds of black gravel. In the cañon leading out toward the Amargosa Desert we found several of the flower-eating [Desert Iguana] (*Dipsosaurus dorsalis*), which we had not seen since leaving the lower Virgin River Valley. A Horned Rattlesnake or Side-winder (*Crotalus cerastes*) and another species of rattlesnake were killed in Indian Spring Valley. They contained kangaroo rats and pocket mice.

The slender branching cactus (*Opuntia* [*ramosissima*]) is common throughout Indian Spring Valley to the cañon, where it finds its western limit. This point is almost due north of the Kingston Range where the species was first found in crossing Nevada from the west.

A new species of branching cactus, *Opuntia parryi*, which is a peculiar prostrate form resembling *Opuntia echinocarpa*, was found on the divide near the west end of Indian Spring Valley, and a few ~~nigger heads~~ *Echinocactus polycephalus* were seen on the rocky walls of the cañon.

The curious *Eucnide urens* was found also, growing in the rocky walls of this cañon. Vegetation was noticeably more advanced on the west than on the east side of the cañon. On the west side *Larrea*, *Krameria*,

and *Lycium andersonii* were almost out of flower and in fruit. *Krameria parvifolia* has large spiny berries. The berries of *Lycium andersonii* are elongated and brownish-orange in color, acid and rather pleasant to the taste, suggesting currants.

In Indian Spring Valley we found nests with eggs of *Amphispiza bilineata*, while on the Amargosa side of the divide, the young were just able to fly. On the west side of the cañon the beautiful [*Malveopsis*] *rotundifolia* was common and mostly in fruit.

Soon after crossing the divide near the west end of Indian Spring Valley the Panamint and Funeral mountains came into sight, the former still covered with snow, which on the west side of Telescope Peak descends to 600 to 900 meters (2,000 or 3,000 ft.) below the summit. Just before going into camp the snow-covered peak of Charleston Mountain was illuminated by the setting sun.

Leaving the dry lake at 7 o'clock on the morning of May 30, we wound among some low ridges of hills for a distance of 8 1/2 miles when we reached the first large spring (known as King Spring) on the east side of Ash Meadows at the foot of a spur of black rock. Here we stopped for several hours to let our horses graze on the grass about the spring, as they had had nothing the night before. At this spring we found the ruin of an old adobe house in which was a nest of Say's [Phoebe] (*Sayornis saya*). Ash Meadows [(Plates X and XI)] takes its name from the presence of a small ash tree (*Fraxinus coriacea*) which is common about many of the warm springs and which was originally described from specimens collected here by the Wheeler Survey. Willows and both kinds of mesquite are common also. Numerous warm springs of clear water send running streams for varying distances across the valley, but the soil is too alkaline to [permit] ranching, hence this bountiful supply of water is permitted to go to waste. Grass is more abundant here than at any other point we have visited since leaving Pahranagat Valley, but it is largely salt grass which is bad for the animals. *Pluchea* [*sericea*] forms low thickets about many of the springs and streams, and *Atriplex hymenelytra* is common in places. Several White-throated Swifts ([*Aeronautes*] *melanoleucus*) were seen, and a [Western Warbling] Vireo (*Vireo gilvus swainsoni*) and flycatcher (*Empidonax difficilis*) were shot among the willows. Several Marsh Hawks in both red and blue plumage were seen.

Most of the warm springs are deep pools containing beautifully clear water, which as a rule flow a few rods in the form of a fine stream, and thence spreads out into a tule marsh. These springs contain a multitude of the small blue fishes already spoken of as so common in the Amargosa River, and at Saratoga Springs at the south end of Death Valley. We moved northward and camped for the night at the northernmost spring in Ash Meadows, the temperature of which was 83° F.

The [White-tailed] Antelope Squirrel was seen in the drier parts of the plain, and the Big Desert Kangaroo Rat (*Dipodomys deserti*) and [*Citellus*] *tereticaudus* [*tereticaudus*] are common in the sand hills, particularly amongst clumps of mesquite.

The horned toads (*Phrynosoma* [*platyrhinos*]) living on the white alkali soil of Ash Meadows are the whitest we have ever seen.

Atriplex confertifolia seems to be the commonest plant on the dry alkaline soil of Ash Meadows and *Atriplex parryi* is also common. *Anemopsis* is abundant on the marshes. [Western] Meadowlarks are tolerably common about the meadows.

May 31 we left Ash Meadows at 7 A.M., and at 7 P.M. made a dry camp in the Amargosa Desert near some dry hills opposite Bare Mountain, having traveled only 25 1/2 miles. The wind blew strong from the south all

night and continued through the forenoon, with heavy rain over Oasis Valley and the southern part of the Ralston Desert, and snow along all the mountains in sight to the north. At noon the sky was half clear in the south and east, while heavy rain continued over Oasis Valley with a gale blowing from the south, when suddenly an immense cloud of sand came through a gap in the Amargosa Mountains (believed to be Boundary Cañon) evidently an overflow from the northwest arm of Death Valley. This cloud of sand rolled south along the west side of the Amargosa Desert and marked the first indication we had of a change in the direction of the wind. In less than five minutes and without any lull or abatement, the wind whirled from south to north, and blew a gale from the north for four hours, bringing with it such a storm of sand that we were forced to stop and put up our canvas for shelter, anchoring one side of it to the wagon to prevent it from blowing away.

An immense sand dune stands on the west of the Amargosa Desert, beginning about a mile south of what we took to be the mouth of Boundary Cañon. This dune is at least two miles in length and 200 feet in height (perhaps considerably higher), and is evidently an overflow from Mesquite Valley.

About 15 miles north of Ash Meadows we passed through a broad strip of the rich bunch grass (*Oryzopsis* [*membranacea*]), the only feed found in the Amargosa Desert, which is a true *Larrea* plain. At the point where the alkali flat of Ash Meadows covered with *Atriplex confertifolia* and *A. parryi* stops and gives place to the gravel soil of the Amargosa Desert proper, the greasewoods disappear and the Creosote Bush (*Larrea* [*tridentata*]) begins with a solid front and continues northward throughout the desert. For miles and miles hardly another plant is to be seen except the inconspicuous wiry *Chorizanthe rigida*. The *Larrea* is now out of flower except in rare instances, and is heavy with its wooly fruit. It is stunted, averaging hardly more than two feet in height and at the upper end of the valley much of it is dead. A little [*Malveopsis*] *rotundifolia* (now in fruit) was seen along with the widespread *Malvastrum*, and in places a large-leaved *Lycium* was found mixed with the *Larrea*. The day was so cold and windy that we saw but few reptiles, yet the Horned Rattlesnake (*Crotalus cerastes*), a flower-eating [Desert Iguana] (*Dipsosaurus dorsalis*), a Leopard Lizard (*Crotaphytus wislizenii*), and several horned toads were seen. The only birds noticed were a few Black-throated Sparrows and LeConte's Thrasher.

There being absolutely no feed or water where we camped at night, we were forced to tie our poor horses to *Larrea* bushes to prevent them from running away in search of something to eat.

The 1st of June was cloudy and chilly, with showers over the Ralston Desert. We broke camp in the Amargosa Desert at 7 A.M. and reached Amargosa Spring in the cañon at the foot of Oasis Valley at noon (distance 14 3/4 miles) where we stopped to let our animals feed on the grass and sedges about the spring, as they had eaten nothing since the morning of the previous day. Among the willows and reeds of this cañon we saw Black-headed Grosbeaks, Lazuli [Buntings], and [Western Wood Pewees].

In the evening we continued in a northerly direction, traversing Oasis Valley to its head, and camped at the last spring on the north-west branch of the Amargosa River, having traveled only 25 miles.

Oasis Valley drains into the extreme northeast corner of the Amargosa Desert, from which it is separated by a short and narrow cañon. The water stops at the mouth of this cañon, below which a broad dry wash curves around to the west and continues southward near the east base of the Amargosa Mountains, being the dry bed of the Amargosa River. The north end of the Amargosa Desert is covered solid with *Larrea* like the southern part except that it is more mixed with *Lycium andersonii* and *L. cooperi*.

All the mountains in sight to the northward today are completely covered with snow, and the whole of the higher part of the Panamint Range also is covered with newly fallen snow, which extends well down into the cañons on the west side. The thermometer registered 50˚ F at 6 A.M. and 64˚ F at 3 P.M. Yesterday it was at 53˚ F in the middle of the afternoon—phenomenally cold weather for these torrid deserts at this season of the year.

Oasis Valley is about 10 miles in length and is narrow and irregular, abounding in springs and marshes, particularly on the east side. Its altitude at the south end just north of the cañon is 1,150 meters (3,800 ft.) while the last water at the head of the west branch of the Amargosa River (where we are camped) is 1,350 meters (4,450 ft.).

Larrea comes into Oasis Valley, but is scattering and finds its northern limit here for this part of Nevada. The same is true of *Franseria dumosa*. The *Larrea* belt is hardly more than three miles wide in most parts of the valley and on the most favorable south and southwest slopes hardly reaches an altitude of 1,375 meters (4,500 ft.). In the *Larrea* areas both species of *Chorizanthe* and *Oxytheca perfoliata* were found. The bottom of the valley is covered with *Sarcobatus vermiculatus*, *Atriplex confertifolia*, *A. parryi*, *A. canescens*, *A. polycarpa*, *Hymenoclea salsola*, *Lycium andersonii*, a large-leaved *Lycium*, and *Suaeda suffrutescens*.

In the northern part of the valley, beginning at about 1,225 meters (4,000 ft.), *Artemisia spinescens*, *Tetradymia glabrata*, *Menodora* [*spinescens*], *Salazaria mexicana*, and *Grayia* [*spinosa*] are more or less abundant. *Atriplex hymenelytra* was not found in the valley, but a few clumps of *Atriplex lentiformis* were seen, and a single bush of *Dalea polyadenia*. *Stanleya* [*pinnata*] is common in places. I rode over to the east side of the valley and climbed the highest flat-topped hill at an altitude of 1,450 meters (4,750 ft.) to look into the Ralston Desert beyond. The east fork of the Amargosa River comes into Oasis Valley through a narrow and short cañon (apparently not more than one-eighth of a mile in length), beyond which is a long marshy valley on the north side of which, apparently three or four miles back from the creek, is a forest of Tree Yuccas. The east branch of Amargosa River is evidently the main stream, being many times longer and larger than the small stream which comes into the head of Oasis Valley from the northwest. Immediately east of the head of Oasis Valley is a small valley draining north into the east branch of the Amargosa River. A little *Larrea* runs into this valley from the middle of Oasis Valley but there is no *Larrea* east of the main part of Bare Mountain or anywhere east or northeast, the whole country in that direction being too high. In the upper part of Oasis Valley *Tetradymia spinosa* and *Eurotia lanata* are common.

[Western] Meadowlarks were common and singing everywhere during the evening. The other birds seen were Mocking Birds, Violet-green Swallows, Barn Swallows, Cliff Swallows, Texas Nighthawks, Spotted Sandpipers, [Western] Red-tail Hawks, a Golden Eagle, the Black-throated Sparrow, and numerous doves. White-throated Swifts were seen copulating in the air, and a few [Western] Lark [Sparrows] (*Chondestes grammacus strigatus*) were found at the north end of the valley. Doves came to the spring to drink in great numbers in the evening, as usual, and many were killed for supper—seven at one discharge of the gun.

One of our gray mules, who had been seen ailing for some time, gave out today, and one of the saddle-horses had to be put in his place to help drag the wagon along.

The next morning, June 2, the thermometer stood at 44° F at 6 A.M. and the day was cloudy with rain over the mountains. In our traps set at the head of Oasis Valley, Bailey caught four kangaroo rats ([*Dipodomys microps occidentalis*]), two pocket mice of different species (*Perognathus formosus* and *P.* [*panamintinus panamintinus*]) and four [grasshopper] mice (*Onychomys* [*torridus longicaudus*]).

Leaving Oasis Valley at 7:30 A.M. we proceeded westerly about four miles, crossing a low divide (altitude 1,450 meters or 4,800 feet), and descended into a large desert valley running approximately north and south, and estimated to measure about 25 miles in length by 10 miles in width. This valley is a broad flat plain containing a dry lake about 10 miles in length by five in width in which is a poison well of black lye, which no animal in his right mind would ever drink. This desert, which we named 'Sarcobatus Flat', lies along the western side of the Ralston Desert and is bounded on the west by the Grapevine Mountains and Gold Mountain. At its northeastern corner stands a mountain, now covered with snow, known as Stonewall Mountain, south of which it seems to be continuous with a series of cliffs or escarpments at least 300 meters (1,000 ft.) in height, forming the eastern boundary of the flat. To the north Sarcobatus Flat becomes continuous with [Lida] and Clayton valleys.

The heavy rains of the last few days had flooded the lowest parts of the flat, where we found drinkable water in abundance. The northwestern side of this dry lake terminates abruptly in a curious dike several miles in length, having a flat top averaging about five feet above the surface level on the west side. It contains a *Larrea* flat. Large areas in this dry lake are absolutely bare, while other parts are covered with clay alkaline dunes, supporting a dense growth of *Sarcobatus vermiculatus*. Several of these *Sarcobatus* dunes are shown in [Plate XII]. I have never seen them elsewhere. The south half of the valley is covered with *Atriplex confertifolia*, very pure and free from admixture with other plants. To the north it becomes invaded by a little *Atriplex parryi*, *A. canescens*, *Suaeda*, *Artemisia spinescens*, *Tetradymia glabrata*, *Grayia* [*spinosa*], *Dalea polyadenia*, *Eurotia lanata*, *Stanleya* [*pinnata*], *Ephedra*, and a new species of *Sarcobatus* recently described by Mr. Coville as *Sarcobatus baileyi* (Proc. Biol. Soc. Wash., Vol. VII, July 1892). This species is now in fruit and unlike its only congener (*S. vermiculatus*) grows on the gravel soil. Since the two forms grow in close proximity in Sarcobatus Flat we were enabled to compare the living plants. A small but highly colored lupine, an *Astragalus*, and the widespread *Malvastrum* were common in places, while bunch grass (*Oryzopsis* [*membranacea*]) was abundant at the south end of the flat, where many doves were seen feeding on its rich oily seeds. A few [Desert] Horned Larks and Black-throated Sparrows were seen.

We traversed Sarcobatus Flat in a northerly direction and camped at the east end of Grapevine Cañon near an abandoned stamp-mill known as [Thorpe] Mill. In an old well at this mill we found a nest of Say's Phoebe, and in the evening I shot two bats there (*Antrozous pallidus* and [*Pipistrellus*] *hesperus*).

Although there is neither *Larrea* nor *Franseria* in Sarcobatus Flat, we saw unmistakable holes of the Big Desert Kangaroo Rat (*Dipodomys deserti*).

In Sarcobatus Flat we secured a Horned Rattlesnake or Sidewinder (*Crotalus cerastes*), a Leopard Lizard (*Crotaphytus wislizenii*), Whip-tail [Lizards] (*Cnemidophorus* [*tigris*]), Gridiron-tail [Lizards] (*Callisaurus* [*ventralis*]), a small brown-shouldered lizard, and horned toads.

At the east foot of the Grapevine Mountains on the west side of the southern half of Sarcobatus Flat we saw a forest of Tree Yuccas in the distance and afterwards learned that one of our own men, Mr. E.W. Nelson, was camped there, having just killed 10 mountain sheep of a new species (which I have named in his honor *Ovis nelsoni*) on the higher peaks of the Grapevine Mountains.

June 3 was another cold day, mostly cloudy and with heavy rains in various directions.

We broke camp at [Thorpe] Mill at 7:30 in the morning, crossed the east end of Grapevine Cañon obliquely and ascended the sloping gravel bench leading up to Gold Mountain from the south. We then climbed over the top of the Gold Mountain ridge (which runs east and west) at an altitude of 2,250 meters (7,400 ft.), exactly 900 meters (3,000 ft.) above the upper end of Grapevine Cañon.

The last mile was so steep that we had to unload and pack our outfit over in order to get the wagon up. The highest point of Gold Mountain is only a few hundred feet higher than the ridge where we crossed it. This ridge is six or eight miles in length, and from its summit we had a fine view in all directions, including the Inyo Mountains and High Sierra on the west. Mount Magruder rose immediately to the north, its summit still covered with snow.

Grapevine Cañon connects Sarcobatus Flat with the northwest arm of Death Valley and separates Gold Mountain from the Grapevine Mountains. It runs from the northeast to the southwest and becomes broader below. It is a broad open cañon throughout. The highest point in the cañon is near the east end and cannot be much more than 1,350 meters (4,450 ft.) in elevation.

The Lower Sonoran animals and plants inhabiting Sarcobatus Flat evidently reach it by way of Grapevine Cañon, and not from the Amargosa Desert, from which they are separated by a mountainous divide; or from Oasis Valley, from which an Upper Sonoran divide effectually prevents the ingress of Lower Sonoran species. *Larrea* and *Franseria* come up solid through Grapevine Cañon from Mesquite Valley almost to its very mouth near [Thorpe] Mill, and run up on the south slope of Gold Mountain to a little above 1,525 meters (5,000 ft.) on an unusually favorable slope exposure, which is a sort of basin wash facing the southwest. In the upper part of Grapevine Cañon within a mile and a half of Sarcobatus Flat, the following plants, were observed: *Atriplex confertifolia*, *A. canescens*, *A. polycarpa*, *A. parryi*, *Dalea polyadenia*, *Hymenoclea salsola*, *Larrea tridentata*, *Franseria dumosa*, *Tetradymia glabrata*, *Lycium andersonii*, *Ephedra olivacea* [sic], *Artemisia spinescens*, *Stanleya* [*pinnata*], *Opuntia echinocarpa*, *Suaeda suffrutescens*, *Chorizanthe rigida*, and *Malvastrum*. Tree Yuccas (*Yucca* [*arborescens*]) begin on the south slope of Gold Mountain at 1,550 meters (5,100 ft.) and range thence up over the summit. With the Tree Yuccas were found *Salazaria mexicana*, *Menodora* [*spinescens*], and *Cereus engelmanni*. *Grayia* [*spinosa*], *Tetradymia spinosa*, and a painted cup (*Castilleia*) were found also among the Tree Yuccas, and *Bigelovia teretifolia* was collected at an altitude of 1,825 meters (6,000 ft.). The true sagebrush (*Artemisia tridentata*) and green *Ephedra* begin together at this altitude (1,825 meters or 6,000 feet) and range thence up over the summit of Gold Mountain. [*Kunzia*] and *Cowania* begin about 100 feet above the lower limit of the sage and also reach the summit. Juniper and Nut Pine are common in sheltered cañons, but do not grow on the main slope in sufficient abundance to admit the determination of their normal lower limit. The wild currant (*Ribes leptanthum brachyanthum*) was collected at 2,125 meters (7,000 ft.). Near the summit a few Tree Yuccas were found in flower, the only ones seen in flower during the Expedition. The blossom of this species is coarser and less attractive than that of any of the other yuccas inhabiting the region. Colonies of five-toed kangaroo rats ([*Dipodomys microps occidentalis*]) were found on the south slope at intervals as high as 1,725 meters (5,700 ft.) owing to the unusually favorable slope exposure.

On the north slope of Gold Mountain *Prunus fasciculata*, *Grayia*, *Tetradymia spinosa*, *Dalea fremontii*, and *Lycium cooperi* were found. Tree Yuccas do not grow on the north slope of the main ridge proper but are common as high as 2,125 meters (7,000 ft.) on southerly slopes of spurs and hills north of the main peak, whence they grow scattering all along the trough or valley which leads westerly along the foot of the main ridge and thence down to the eastern side of the northwest arm of Death Valley, ranging as low as 1,775 meters (5,800 ft.). The jack rabbit (*Lepus* [*californicus deserticola*]) was shot on the north side of Gold Mountain at an altitude of 1,825 meters (6,000 ft.) and [*Pipistrellus*] *hesperus* and [*Myotis californicus*] were shot at the old Gold Mountain Mining Camp in the evening. The abandoned Gold Mountain Mining Camp, known as 'State Line' is on the north slope of the mountain at an altitude of 1,850 meters (6,100 ft.). There being no water here, water has been piped at enormous expense all the way from Tule Cañon on Mount Magruder. An extensive mining camp representing hundreds of thousands of dollars is going to ruin here. While traveling along the north side of the mountain, we were caught in a heavy storm and thoroughly drenched.

On the morning of June 4 the thermometer stood at 46° F at 6 A.M., with a clear sky, which continued throughout the day. On breaking camp at Gold Mountain or 'State Line' I rode to the summit of a high hill (2,000 meters or 6,600 feet) west of the old mining camp to obtain a view of the surrounding region. Looking across the northwest arm of Death Valley close at hand (in which no *Larrea* was seen) the ranges to the westward culminating in the High Sierra were plainly seen. Descending from Gold Mountain in a northerly direction we crossed a valley perhaps four or five miles in width, the bottom of which is 1,725 meters (5,700 ft.) in altitude, and thence entered Tule Cañon in which we began the ascent of Mount Magruder. The narrow valley between Gold Mountain and Mount Magruder is covered with sagebrush (*Artemisia tridentata*) mixed with *Atriplex confertifolia*, *Grayia* [*spinosa*], *Tetradymia glabrata*, and a little *Artemisia spinescens*, and a beautiful yellow *Calochortus* was flowering plentifully. *Oroscoptes montanus* was obtained here, together with two young of the [Desert] Horned Lark (*Otocoris* [*alpestris*] *arenicola*).

A large forest of Tree Yuccas was seen on the southeast slope of Mount Magruder.

The valley between Gold Mountain and Mount Magruder opens east into the north end of Sarcobatus Flat and looks toward Stonewall Mountain. The altitude of Tule Cañon where we entered it is 1,800 meters (5,900 ft.). It is a narrow winding cañon coming out of Mount Magruder, and is one of several terminal cañons of the northwest arm of Death Valley, all of which head on the south slope of Mount Magruder.

A number of Chinamen and several white men were engaged in placer mining here, and have dug up the whole bottom of the cañon. Sagebrush (*Artemisia tridentata*) grows luxuriantly throughout the cañon and is more or less mixed with [*Kunzia*], *Ephedra* [*viridis*], *Symphoricarpos*, *Cowania*, *Prunus*, *Ribes*, *Peraphyllum*, and some *Amelanchier*.

The Spurred and Green-tailed Towhees, Lazuli [Bunting], House Finch, and Brewer's Sparrow were observed in this cañon, along with Rock Wrens and a few shrikes.

Nut Pine (*Pinus monophylla*) begins a little below the summit of the Mount Magruder plateau. A handsome pair of Scott's Oriole (*Icterus parisorum*) were shot here—the first place we have seen the species since leaving the Juniper or north Mormon Mountain plateau. The song of this oriole suggests both that of the oriole and the [Western] Meadowlark. In the evening I shot a very red female Poor-will (*Phalaenoptilus nuttalli*) and heard several others. A red spotted female Leopard Lizard (*Crotaphytus wislizenii*) was captured in Tule Cañon as high as 1,950 meters (6,400 ft.) on a south slope. We camped at a little spring just below the summit, but moved camp the next morning into the horse-shoe shaped plateau on top of Mount Magruder. The view of the White Mountains from Mount Magruder is magnificent. They rise in a superb wall covered with snow and ice with a huge half crater-like cañon on the east side of the main peak facing Fish Lake Valley. I never saw anything equal to those mountains except Mount Rainier as seen from Puget Sound, which is totally different, rising as a single peak, while the White Mountains like the High Sierra rise in a single wall.

We remained on Mount Magruder five days exploring its various parts. Mount Magruder may be described as a small elevated plateau bearing a number of mountain peaks about its margin, or as a high mountain containing a horseshoe-shaped plateau or sage plain surrounded by peaks and hills. The main peak rises from the eastern edge of the mountain and faces the Ralston Desert. Immediately to the north of it is another peak slightly exceeding it in height, which may be considered either as a part of Mount Magruder or as a separate mountain at the southern termination of the Silver Peak or Red Mountain Range. Nearly all the hills that rise from the margin of the Mount Magruder plateau are covered with forests of Nut Pine, many of which are unusually dense and pure. Juniper is scarce. Mountain mahogany is abundant on part of the main peak, but the greater part of the main peak is bare or covered only with stunted sagebrush and the green *Ephedra*. The horseshoe-shaped plateau occupying the central part of the mountain is a true sage plain, the opening of which faces the northwest, looking toward the White Mountains. The various peaks and knobs of Mount Magruder, though steep, are not precipitous, and rarely have rocky cliffs. They are usually rounded and stony, the surface rock consisting of angular chips of quartzite, mostly of small size.

By the end of the first week in June the new snow which covered Mount Magruder a week previously had disappeared, leaving only the deep drifts of hard snow remaining from the winter. One of these on the north side of the summit of the main peak was more than 300 meters (1,000 ft.) in length. The view from the summit of the main peak was the finest and most comprehensive we had had and was unobstructed in any direction except the west, where it was cut off by the lofty wall of the High Sierra, the upper part of which was completely buried in deep snow. To the north we saw [Arc] Dome (the highest peak in Nevada) and San Antonio Peak both nearly 100 miles distant and both covered with snow. To the south the snow cap of Telescope Peak, though 100 miles away,

was distinctly visible. To the east the view lay across the Ralston Desert with its alternating basins and desert ranges as far as the eye could reach, while to the southeast nearly 150 miles distant the snow cap of Charleston Peak was distinctly outlined. Mount Magruder stands at the head of the northwest arm of Death Valley, which it separates from Fish Lake Valley. Its position, therefore, in connection with its altitude gives the observer the key to the topography and geography of an enormous area in eastern California and western Nevada. [Lida] Valley cuts into the northeast base directly at the north foot of the main peak, while Clayton Valley, which looks like a great mud flat, lies between Fish Lake Valley and the Ralston Desert.

On the 6th of June the following peaks seen from Mount Magruder were covered with snow: [Arc] Dome, San Antonio Mountain, Montezuma Mountain, Charleston Peak, parts of Gold Mountain, Grapevine Peak, Telescope Peak, Red Mountain, and the whole of the High Sierra and the northern part of the White Mountains.

In returning to camp shortly after sundown an interesting phenomenon was observed. The sky in all directions was absolutely clear except over the snow-clad summit of the highest peak of the White Mountains, where several circular biconcave disks of cloud were forming, one above the other, the result of the cooling of the superheated air of the deserts on both sides (Fish Lake Valley on the east and Owens Valley on the west) rising over the several thousand feet of snow which at this time covered the White Mountains. These disks of cloud, after reaching a certain altitude, lost their definite outlines and drifted slowly away to the north.

The small sage plain of Mount Magruder so far as its animals and plants are concerned might be a part of the true sage plains of Idaho. The small scaly lizard of the sage plains (*Sceloporus graciosus*) was common, and the characteristic birds of the Snake Plains of Idaho were likewise abundant breeders. These birds are Brewer's Sparrow (*Spizella breweri*), Sage Sparrow (*Amphispiza belli nevadensis*), Western Lark [Sparrow] (*Chondestes grammacus strigatus*), Western Meadowlark (*Sturnella* [*magna*] *neglecta*), Sage Thrasher (*Oroscoptes montanus*), and the [Desert] Horned Lark (*Otocoris* [*alpestris*] *arenicola*)—all breeding in abundance except the sage sparrow, which was scarce. About the edges of the junipers the Green-tailed [Towhee] (*Pipilo chlorurus*) was more abundant than I had ever seen it before, and its pleasant song could be heard in all directions. Another characteristic bird of the sage plains, the Sage [Grouse] (*Centrocercus* [*urophasianus*]), is still found on Mount Magruder, though scarce.

The mammals also are equally characteristic of the northern sage plains: the little [Piute Ground Squirrel] ([*Citellus townsendii*] *mollis*) abounding in small colonies, the [Great Basin] Chipmunk ([*Eutamias*] *minimus pictus*) being common, as were also the large [Mount Magruder] Pocket Mouse (*Perognathus* [*parvus magruderensis*]), the pocket gopher (*Thomomys clusius* [sic]), the [Sonora] White-footed Mouse ([*Peromyscus maniculatus sonoriensis*]), and the [Short-tailed] Vole ([*Microtus*] *curtatus*) of which Mount Magruder is the type locality. The type specimen, a half grown young, was collected by Dr. Gabb above Pigeon Spring on the north slope of Mount Magruder more than half a century ago. How he got there and what his business was I am unable to surmise, unless he was possessed of the mining fever. The Plumed Quail (*Oreortyx pictus plumiferus*) is common on Mount Magruder, where it reaches the extreme eastern limit of its distribution. In the junipers covering the hills that rise from the margin of the plateau several flocks of [Piñon] Jay ([*Cyanocephalus*] *cyanocephalus*) were seen, and the handsome Scott's Oriole was tolerably common and was usually seen in pairs, apparently hunting nesting sites. Among the junipers also the [Western] Chipping Sparrow (*Spizella* [*socialis*] *arizonae*) was common, as were *Dendroica nigrescens*, *Sialia arctica*, *Polioptila caerulea* [*obscura*], *Psaltriparus plumbeus*, and *Lanius* [*ludovicianus*] *excubitorides*. Rock Wrens (*Salpinctes obsoletus*) were common and generally distributed in suitable places. A few Mountain [Chickadees] (*Parus gambeli*) were found high up among the Nut Pines. Nuttall's poor-will (*Phalaenoptilus nuttalli*) were heard every night, the Black-headed Grosbeak (*Habia melanocephala*) and Spurred Towhee (*Pipilo* [*maculatus*] *megalonyx*) were also found, and two small flycatchers (*Empidonax difficilis* and *Contopus richardsonii*) were secured. Mocking Birds and Lazuli [Bunting] were common lower

down. One of the most interesting birds seen on the mountain was the [Ferruginous Rough-leg] Hawk (*Archibuteo ferrugineus*) a pair of which were living on the main peak and were frequently seen hunting together.

Brewer's Sparrow and the Green-tailed [Towhee] are the most abundant birds on the Magruder Plateau, where they were breeding abundantly, the males usually singing from the tops of sagebrush and Nut Pines. The Leopard Lizard (*Crotaphytus wislizenii*), while not found on Mount Magruder Plateau, was seen high up in Tule Cañon, which it reached from the northwest arm of Death Valley, and in the wash leading down to Fish Lake Valley.

We had spent several days in vainly trapping for [*Microtus*] *curtatus* when in ascending the main peak we saw a small animal, which we took to be a young pocket gopher, run out from under a [*Kunzia*] bush. I shot it with my auxiliary and found to my delight that it was an adult female of this long-sought species. We found runways of the [vole] among the sagebrush, [*Kunzia*], and dwarf plums (*Peraphyllum ramosissimum*) and put out a number of traps in which we succeeded in catching 15 specimens.

Peraphyllum was flowering profusely at this time. Both *Symphoricarpos* and a species of *Ceanothus* were common on the main peak on which true sagebrush (*Artemisia tridentata* and *Artemisia* [*spinescens*]) together with *Ephedra* [*viridis*] reached the very highest point on the south and southwest slope. The sagebrush here grows in a singular manner. Instead of being irregularly distributed it grows in regular horizontal lines around the knobs and vertical lines over the saddles. The mountain mahogany (*Cercocarpus ledifolius*) is common above 2,575 meters (8,500 ft.), but does not reach the summit. It is unusually large here.

[Sonora] White-footed Mice ([*Peromyscus maniculatus sonoriensis*]) are so abundant on the mountain that they interfere greatly in trapping other mammals, getting into nearly all the traps set immediately after nightfall and not giving any other species a fair chance to get caught.

On the afternoon of June 8 we left Mount Magruder, descending the north slope by means of a broad wash leading past Pigeon Spring, and thence curving westward into the southeast corner of Fish Lake Valley. Crossing the south end of Fish Lake Valley, we camped in the lower part of the cañon leading up to Deep Spring Valley at the base of the White Mountains, having traveled 20 miles from Log Spring at the mouth of the horseshoe-shaped plain of Mount Magruder. Cottonwood Creek, which comes into the southern end of Fish Lake Valley from the White Mountains, was booming and flooded part of the flat.

In descending the northwest slope of Mount Magruder a number of plants range up from Fish Lake Valley to the neighborhood of Pigeon Spring at an altitude of about 2,050 meters (6,700 ft.). *Eurotia lanat*a and *Sarcobatus vermiculatus* reach Pigeon Spring. One hundred or 200 feet lower, the upper limit of *Artemisia spinescens*, *Grayia* [*spinosa*], *Atriplex canescens*, and the salmon *Malvastrum* is entered. All of these range down into Fish Lake Valley. At 1,950 meters (6,400 ft.) *Atriplex confertifolia*, *Stanleya* [*pinnata*], *Opuntia macrocarpa* [sic], and *Menodora* [*spinescens*] appear, and a little lower *Lycium andersonii*, *Opuntia basilaris*, *Dalea polyadenia*, and *Dalea fremontii* become common. *Artemisia tridentata* comes down from the mountain to Pigeon Spring and descends several hundred feet lower on the south side of the wash, where it has a northerly exposure. All of the altitudes above given relate to Pigeon Spring Wash, and consequently cannot be taken as an index to the normal altitudes which the several species reach on the regular slopes of the mountain. A scattering growth of Tree Yuccas occupies the northwest slope of Mount Magruder and some disjointed hills from an altitude of about 2,075 meters (6,800 ft.) or a little higher down to the upper part of Fish Lake Valley at about 1,725 meters (5,700 ft.).

The [Piute Ground Squirrel] ([*Citellus townsendii*] *mollis*) descends in Pigeon Spring Wash to Fish Lake Valley. The [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) is common in Fish Lake Valley, ranging up to 1,775 meters (5,800 ft.) or higher. The flat in the bottom of the south end of Fish Lake Valley is

covered with *Artemisia spinescens* and *Eurotia lanata* on the east side, with *Atriplex confertifolia* predominating in the middle portion. On the west side *Sarcobatus vermiculatus* is the most conspicuous plant. The most interesting botanical feature of this end of the valley is the presence of a narrow zone of the new *Sarcobatus baileyi* at an altitude of 2,000 meters (6,600 ft.) in the southeast corner of the valley. On the west side of Fish Lake Valley *Artemisia tridentata* and [*Kunzia*] *tridentata* come down from the White Mountains to about 1,675 meters (5,500 ft.).

The Black-throated Sparrow (*Amphispiza bilineata*) and Brewer's Sparrow (*Spizella breweri*) were common in the valley.

The following day, June 9, we ascended the westernmost ridge of the White Mountains, and descended into Deep Spring Valley, which we crossed and then ascended the main slope of the White Mountains and camped in a sage plain on the summit having traveled 22 1/2 miles.

Deep Spring Valley is about 10 miles long and from three to five miles in width and is situated in the White Mountains by which it is completely surrounded. The altitude of its bottom is about 1,600 meters (5,300 ft.) while that of the lowest part of the divide on the east is 2,050 meters (6,750 ft.) and the main divide on the west 2,350 meters (7,700 ft.). Its main axis is east and west, or at right angles to the axis of the White Mountains. A small alkaline lake surrounded by an alkaline flat occupies the west end of the valley, near which is a very deep spring from which the valley is said to take its name. The remaining part of the bottom is mostly sandy. The only water flowing into the valley is a small spring near the east end, which hardly furnishes sufficient water for a single ranch.

The plants growing in the valley are *Tetradymia spinosa*, *Grayia* [*spinosa*], *Atriplex canescens*, *Menodora* [*spinescens*], *Dalea polyadenia*, *Dalea fremontii*, *Artemisia* [*spinescens*], *Lycium andersonii*, and *Eurotia lanata*. *Stanleya* is common on the higher levels and *Hymenoclea salsola*, *Opuntia basilaris*, *O. echinocarpa* and *Cereus engelmanni* are common in the wash leading up to the White Mountain pass. True sagebrush (*Artemisia tridentata*) does not enter the valley at all. *Atriplex confertifolia* and *Sarcobatus* were not seen, but they may grow in the alkali flat about the lake, which we did not visit. The birds seen in the valley were *Spizella breweri*, *Amphispiza bilineata*, *Otocoris*, and *Spinus psaltria*.

The Leopard Lizard (*Crotaphytus wislizenii*) and the armor-plated Whip-tail [Lizard] (*Cnemidophorus tigris*) were common in Deep Spring Valley, and Bailey's vicious [Ring-necked] Lizard (*Crotaphytus baileyi*) with a handsome speckled greenish back was found in the lower part of the cañon leading up over the White Mountains.

The road across the White Mountains leaves Deep Spring Valley by a deep wash, which soon becomes a fine lava cañon with high rock walls on both sides entirely bare below, and covered with a scattering growth of juniper and Nut Pines above. True sagebrush (*Artemisia tridentata*) begins on the east slope at an altitude of about 1,925 meters (6,300 ft.) and runs up over the summit of the range, as do *Cereus* [*mojavensis*] and a species of painted cup (*Castilleia*).

A beautiful chipmunk (*Eutamias chrysurus* [sic]), the same as the species inhabiting the upper part of the Panamint Mountains, begins with the junipers and Nut Pines at about 2,050 meters (6,700 ft.) and ranges thence up, over, and along the summit of the White Mountains wherever there is Nut Pine. The [Great Basin] Chipmunk, i.e., sage plains chipmunk ([*Eutamias*] *minimus pictus*), is common in the sage plains along the summit of the range.

The following birds were observed on or near the summit [between Deep Spring and Owens valleys]: *Sialia arctica* (all males, the females evidently sitting), *Myiarchus cinerascens*, *Salpinctes obsoletus*, *Aphelocoma woodhousei*, [*Cyanocephalus*] *cyanocephalus*, *Lanius* [*ludovicianus*] *excubitorides*, *Spizella breweri*, *Carpodacus*

mexicanus frontalis, *Thryothorus* [*bewickii*] *spilurus*, [*Dryobates*] *villosus hyloscopus*, *Contopus richardsonii* (large form), and a single [Desert] Sparrow Hawk (an adult male, the first seen since leaving Death Valley).

The [Sagebrush] Lizard (*Sceloporus graciosus*) is common amongst the sagebrush on the White Mountains, and a large black species (*Sceloporus* [*biseriatus*]) was found on the rocks near the summit.

On the summit of the pass over the White Mountains we caught two pocket mice (*Perognathus* [*parvus magruderensis*]), one pocket gopher (*Thomomys* [*perpallidus perpes*]), three [*Peromyscus crinitus stephensi*], two [*Peromyscus truei*], and 10 [*Peromyscus maniculatus sonoriensis*], which kept us skinning most of the forenoon, for we had nine chipmunks and a number of birds left over from the previous evening.

Breaking camp at 11 A.M. on the morning of June 10 we entered a fine lava box cañon and rode down the west slope of the White Mountains into Owens Valley, reaching the town of Big Pine at 4 P.M. (distance 12 miles). From Big Pine we turned south and moved down the valley 11 miles further and camped for the night a short distance west of Owens River in a flat where mosquitoes were excessively abundant and annoying, nearly causing our animals to stampede.

In descending the White Mountains the view of the High Sierra on the opposite side of the narrow Owens Valley was particularly grand and imposing. The higher parts of the Sierra were at this time deeply buried in snow and the cañons and precipitous faces of the cliffs were marbled with white for several thousand feet below the crest of the range.

The cañon through which we descended from the White Mountains took a very zigzag course, presenting all conceivable combinations of slope exposures, so the altitudes of the various species attained there are likely to be misleading. Sagebrush descends to 1,975 meters (6,500 ft.) on northerly exposures, but stops considerably higher on southerly exposures. Where the sagebrush ends the following plants begin to appear: *Grayia* [*spinosa*], *Dalea fremontii*, *Atriplex confertifolia*, *Tetradymia spinosa*, *Atriplex canescens*, *Stanleya*, *Peucephyllum schottii*, and *Malvastrum*.

Crotaphytus baileyi was common in the higher parts of the cañon, along with the black *Sceloporus* already mentioned, and the Leopard Lizard (*Crotaphytus wislizenii*) came up from Owens Valley to the lower edge of the sage. Whip-tail [Lizards] (*Cnemidophorus* [*tigris*]) and the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) were seen as high as 2,125 meters (7,000 ft.) on a warm southern exposure.

Owens Valley is the westernmost of the desert valleys of the Great Basin, of which it forms an important part of the western boundary. While not so deep as Panamint and Death valleys, the mountains on either side rise to much greater altitudes. It lies directly at the foot of the High Sierra and is hemmed in on the east by another lofty range, the southern part of which is known as the Inyo Mountains and the northern as the White Mountains, though there is no break between the two parts. Owing to the heavy rain-fall and perpetual snow on the High Sierra, numerous streams of pure mountain water flow down the west side of Owens Valley where they form a river of considerable size and furnish ample water for irrigation. On the opposite or Inyo Mountain side not a single stream comes down into the valley. The High Sierra, owing to its great altitude and low temperature, so completely deprives of moisture the winds coming from the Pacific coast region that little if any is left to fall on the Inyo Mountains on the opposite side of Owens Valley. The Inyos, therefore, are arid and barren, and should be classed with the true desert ranges. Its higher summits support a scant growth of junipers and Nut Pine. Further north the White Mountains, owing their great altitude and to the lower altitude of the Sierra opposite, receive a much greater rain-fall and are deeply buried in snow for more than half the year.

Owens Valley is a true desert valley differing in no respect from those of other parts of the Great Basin, except that it receives a more abundant water supply. The same species of desert brush, reptiles, birds, and mammals that are found in the other valleys inhabit Owens Valley as well. The most remarkable feature of the valley is the large lake near its southern end—Owens Lake [(Plate XIII)]—which receives and evaporates all the water flowing into it through Owens River and several large streams from the west. Owens Lake resembles the Great Salt Lake in being filled with brine, but it differs from the Great Salt Lake in containing a very large quantity of alkali also. Great numbers of water fowl, particularly the [Eared] Grebe, stop at the lake in migration and thousands of them never leave. They are probably poisoned by drinking the water of the lake. At all events thousands of their dead bodies are washed ashore and strewn along the beach particularly at the north end of the lake. A few Avocets were found near the head of the lake where they breed regularly, and in winter large numbers of ducks of different species are seen there.

There are several small towns in Owens Valley, one of which, Keeler, is on the east side of the lake and is the point of departure for the Cerro Gordo mine in the southern end of the Inyo Mountains, and the mines at Darwin in the northern end of the Argus Mountains.

[On] June 11 we continued south on the west side of the valley and reached the camp [(Plate XIV)] of the main part of the Expedition at Lone Pine at 8 P.M. having traveled 31 1/2 miles. On setting out from Hot Springs in Panamint Valley in April, the several branches of the Expedition had agreed to rendezvous in the neighborhood of Lone Pine [on] June 12 or as near thereafter as possible [(Plate XV)]. Mr. Palmer and Dr. Fisher were in camp at Lone Pine on my arrival. Mr. Colville came in two days later, followed shortly by Mr. F. Stephens, Mr. E.W. Nelson, and Basil Hicks Dutcher, thus completing the party. Stephens had been at work in Salt Wells Valley and had afterwards visited Olancha Peak and Monache Meadows where he had secured many things of interest.

Nelson came in from Saline Valley, having traversed Cottonwood Cañon on the west side of Mesquite Valley and visited the Grapevine Mountains where in company with some Panamint Indians he had secured 10 mountain sheep.

The town of Lone Pine is of special interest because it was destroyed by a violent earthquake in 1872, at which time the greater part of the inhabitants lost their lives by the falling ruins of their adobe houses. Thirty-five of the unfortunates were buried in one grave on a low knoll just north of the village. For a distance of about 40 miles the bottom of the valley sank below the level of the west side, leaving a cliff or escarpment many miles in length and about 20 feet in height at the foot of the Alabama [Hills]. This earthquake scarp is still plainly to be seen by anyone riding along this part of the valley. The earthquake changed the course of Owens River in places, created ponds where there were none before, and drained those previously existing, creating considerable consternation among the surviving inhabitants of the valley.

A tongue of the Lower Sonoran Zone covers the southern part of the bottom of Owens Valley [(Plate XVI)], reaching as far north as Lone Pine, beyond which it is narrowed into a strip on the gravel slope at the foot of the Inyo Mountains, along which it extends considerably further north, this being the hottest slope exposure in Owens Valley. True sagebrush (*Artemisia tridentata*) covers the whole of the northern part of Owens Valley and the mountain slopes on both sides. On the west (Sierra) side it is abundant all the way south to Owens Lake.

Atriplex confertifolia is the commonest plant on the sand flats and *A. parryi* is common in places. Among the common desert brush of the valley are *Tetradymia comosa*, *T. glabrata*, *T. spinosa*, *Grayia* [*spinosa*], *Lycium andersonii*, *Lycium cooperi*, *Hymenoclea salsola*, *Peucephyllum schottii*, *Coleogyne ramosissima*, and *Eriogonum fasciculatum*. *Coleogyne* forms a well-marked zone at the foot of the Sierra slope, but little *Larrea* grows anywhere in the valley north of Owens Lake except along the gravel slope at the foot of the Inyo Mountains. A little,

however, occurs in favorable spots on the west side of the lake, where *Franseria dumosa* is common. *Atriplex polycarpa* is common south of Lone Pine, and *A. parryi* occurs in places. *Sarcobatus vermiculatus* is abundant on the alkaline mud flats. Two species of ash, [including] *Fraxinus* [*coriacea*], form attractive groves along the streams that enter Owens Lake from the west and were heavily laden with fruit about the middle of June. Willows, cottonwoods, and birches (*Betula occidentalis*) are common also on some of these streams.

The [Valley] Quail (*Callipepla californica vallicola*) is common throughout the valley, where we found many broods of young and often saw males crowing from fence posts and rocks.

Most of the desert lizards are common in Owens Valley. *Crotaphytus wizlizenii*, *Callisaurus* [*ventralis*], and *Cnemidophorus* [*tigris*] were common in the southern part, while *Crotaphytus baileyi* and *Sceloporus graciosus* were common in the sage. The [Big] Desert Kangaroo Rat (*Dipodomys deserti*) is common as far north as Lone Pine, while the smaller *D. merriami* [*merriami*] and the five-toed [*Dipodomys microps*] range further north.

The Road-runner or chaparral cock was occasionally seen, and several Ravens were noted on the west side of Owens Lake. The rare Black Swift (*Cypseloides niger*) was common about Owens Lake and seemed to be breeding in the Inyo or Cerro Gordo Mountains. A number of specimens were secured. The White-throated Swift was also common in places. The Texas Nighthawk (*Chordeiles texensis*) was breeding abundantly in the southern end of the valley where ~~numbers used to~~ they rolled in the dust in the road near Lone Pine every evening. Nuttall's Poor-will (*Phalaenoptilus nuttalli*) was common also near Lone Pine, as were also the Arkansas [Kingbird] (*Tyrannus verticalis*) and Say's [Phoebe] (*Sayornis saya*). [*Calypte*] *costae* was common in the upper part of the valley and *Trochilus alexandri* in the lower part. White-rumped Shrikes were common and their full-grown young were familiar and unsuspicious. Yellow-headed and Red[-winged] Blackbirds were common along the marshes, particularly in the northern part of the valley, and [Western] Meadowlarks were abundant and full of song. Mocking Birds, [Long-tailed] Chats, Lazuli [Buntings], and [Western] Blue Grosbeaks were rather common. LeConte's Thrasher was common about Owens Lake, where it breeds, and the Spurred Towhee (*Pipilo* [*maculatus*] *megalonyx*), [Western] Lark [Sparrow] (*Chondestes grammacus strigatus*), *Spizella breweri*, and *Amphispiza belli nevadensis* were common in the sagebrush, particularly in the upper part of the valley. The Black-throated Sparrow (*Amphispiza bilineata*) was common about the lake and ranged up on the east side of the valley on the warm slope at the foot of the Inyo Mountains as far as Alvord. The House Finch (*Carpodacus mexicanus frontalis*) was common and universally distributed. The common summer yellowbird or Yellow Warbler (*Dendroica aestiva*) was common also, and [Desert] Horned Larks with nearly full-grown young were plentiful in the desert places.

Cottontails and jack rabbits were unusually abundant and unsuspicious, particularly between Big Pine and Lone Pine.

On June 15 Mr. Bailey and Dr. Fisher left our camp at Lone Pine for Death Valley, in order to determine what species of late nesting birds remained there to breed. They took three pack animals in addition to their saddle horses, and went directly across the mountains by way of Wildrose Spring and Death Valley Cañon.

On June 17 Mr. Palmer and I climbed the High Sierra by the old Hockett Trail and established a meteorological station at the head of Big Cottonwood Meadows about eight miles south of Mount Whitney at an altitude of a little more than 3,050 meters (10,000 ft.). We left Basil Hicks Dutcher in charge of this station [(Plate XVII)] with F.W. Koch as general assistant. Their outfit was packed up on four mules. The point selected for the station was a gravel knoll on the east side of upper Cottonwood Creek near its head, in a grove of pines (*Pinus aristata* and *P. contorta* [*murrayana*] at the mouth of a great horseshoe-shaped amphitheater surrounded by lofty barren crags. Huge snow banks abounded in all directions and the streams were flooded by rapidly melting snow.

The handsome Golden[-mantled] Ground Squirrel (*Citellus lateralis chrysodeirus*) had just emerged from winter quarters and was common among the rocks. Two species of chipmunks also were common high up on the mountains, one ([*Eutamias alpinus*]) keeping among the rocks chiefly in the neighborhood of timber-line, the other ([*Eutamias quadrivittatus inyoensis*]) climbing trees freely and living in standing timber. The little chief hare or Pika ([*Ochotona*] *schisticeps*), [Gray] Bushy-tailed Wood Rat (*Neotoma cinerea*), Southern Sierra Marmot ([*Marmota flaviventris sierrae*]), and a handsome red fox, which proved to be a new species (*Vulpes* [*necator*]), were afterwards collected in the vicinity.

[Sooty] Grouse (*Dendragapus obscurus* [*faliginosus*]) were tolerably common, as were Mountain Bluebirds (*Sialia arctica*) and Stellar's Jay (*Cyanocitta* [*stelleri*] ~~*frontalis*~~). Clarke's [Nutcracker] (*Picicorvus columbianus*) and a few [Western] Robins and flickers were seen as well as crossbills, several juncos, many Audubon's Warblers, and the Western Chipping Sparrow.

But two species of trees reach timber-line here, namely, *Pinus aristata* and *P*. [*murrayana*]. A little lower down *Pinus albicaulis* and *P*. *ponderosa* are common. Mountain mahogany was abundant in a zone about 600 meters (2,000 ft.) in width between 2,275 and 2,900 meters (7,500 and 9,500 ft.), where it grows to unusual size, many trunks attaining a diameter of a foot. A handsome Chinquapin (*Castanopsis chrysophylla*) was found in a narrow zone above 2,725 meters (9,000 ft.), while a manzanita was common from the same altitude down to about 2,225 meters (7,300 ft.) on the east slope. The Nut Pine formed a belt just above Owens Valley, ranging from 1,825 to 2,425 meters (6,000–8,000 ft.) in altitude.

After spending one night in the High Sierra, we returned to camp at Lone Pine. On the following morning, June 19, we left Lone Pine for Walker Pass, our party having undergone a considerable change in its personnel. Mr. Bailey and Dr. Fisher were in Death Valley. Mr. Stephens had gone north into the upper part of Owens Valley, and Nelson was about to start out for the less accessible parts of the White Mountains and the Bishop Creek region. I was accompanied by Mr. T.S. Palmer and our botanist, Mr. F.V. Coville, with McGrath for teamster and cook. We followed the west shore of Owens Lake southward and camped the first night at Olancha near the south end of the lake. The next morning, June 20, we broke camp at 6:30 A.M. and traveled all day, camping at 6:30 P.M. about eight miles south of Little Owens Lake, having traveled 32 1/2 miles. On the west slope of the Coso Mountains about three miles south of Olancha we saw a grove of Tree Yuccas, which extended southerly nearly to Haiwee Meadows, and a few scattering trees were seen still further south. Several LeConte's Thrashers were observed.

For about nine miles south of Olancha the valley south of Owens Lake is very narrow and nearly level, sloping slightly to the south, with gravel benches on both sides. Its bottom is covered with desert brush, among which *Atriplex confertifolia*, *A*. *canescens*, and *A*. *polycarpa* are common. *Artemisia tridentata* covers some of the cooler slopes, while *Larrea* occupies the warmest exposures. *Sarcobatus vermiculatus* is common on the alkali flats and *Atriplex parryi*, *Hymenoclea salsola*, *Dalea polyadenia*, *D*. *fremontii*, *Lycium cooperi*, and [*Acamptopappus*] *sphaerocephalus* are common in places. *Franseria dumosa* is associated with the scattered clumps of *Larrea* as usual. This valley spreads out into a grassy and springy flat, known as [Haiwee] Meadows, nine miles south of Olancha, immediately below which it narrows into a cañon four miles long and then expands into a broad basin perhaps 10 miles in length with a small spring at the northwest corner, near some lava cliffs in which there are caves. A crater butte stands in the south end of the valley, and great lava flows come down into it from the Coso Mountains. South of the crater butte the valley narrows into a sort of cañon near the north end of which is Little Owens Lake, locally known as 'Little Lake'. It is about 25 miles south of Owens Lake. The broad valley above Little Lake is a *Larrea* plain and the *Larrea* here attains unusual dimensions. On the west side of this basin is a goat ranch where the largest herd of angora goats in America is said to be quartered in winter.

The [Fulvous] Tree Duck (*Dendrocygna fulva*) was found [at] Little Owens Lake—the only place where it was obtained by the Expedition. Night herons, Ravens, Great Blue Herons, and Coots were also seen about the lake, and a Burrowing Owl was found six miles further south.

A great lava dike comes down to the valley from the Coso Mountains, beginning about a mile north of Little Owens Lake and forming a precipitous wall at least 150 feet in height along the east side of the lake and valley for about 10 miles. Little Lake is the result of a lava flow which has dammed the valley at the point where its lower end now is. Below this the narrow valley descends rapidly for a mile and then continues with a gradual descent to the western side of Salt Wells Valley. Little Owens Lake is about a mile long and is narrow and enclosed between black lava walls on both sides, with patches of tules in places.

The altitude of [Haiwee] Meadows is essentially the same as that of Owens Lake, namely 1,100 meters (3,600 ft.) while the point where we made a dry camp eight miles south of Little Owens Lake is 300 meters (1,000 ft.) lower—2,600 feet.

We broke camp early on the morning of June 21 and camped at Canebreak Creek ~~in Walker Pass~~ six miles west [of Walker Pass] at 6 P.M., having traveled 31 1/2 miles. Our route lay southerly along the west side of Salt Wells Valley and thence westerly into Walker Pass. Salt Wells Valley is a *Larrea* plain and rises on the west to probably an altitude of about 1,075 meters (3,500 ft.) along the divide between it and the Mohave Desert proper. Its lowest outlet seems to be to the east into Hot Springs Valley and perhaps thence into Borax Flat. The altitude of the bottom of the valley is about 725 meters (2,400 ft.).

On the western edge of the Mohave Desert 12 1/2 miles south of the place where we camped the previous night, and 13 miles from the summit of Walker Pass, is a water hole known as Indian Well. The place was excessively hot and the water poor, but good water was found on both sides of the summit of Walker Pass. We did not visit Coyote Holes, but turned into the mouth of the pass a little north of it. The altitude of the summit of the pass is 1,550 meters (5,100 ft.). From the summit an excellent view over the Mohave Desert is obtained, Pilot Knob being the most conspicuous landmark. *Larrea* comes up from the desert and enters the mouth of the pass which it crosses obliquely at an altitude of 1,025 meters (3,400 ft.), reaching as high as 1,100 meters (3,600 ft.) on the north side (south slope exposure). *Franseria dumosa* ranges about 100 feet higher than the *Larrea*. Tree Yuccas begin where the *Larrea* ends at about 1,100 meters (3,600 ft.) and forms a fine forest in the pass, filling it all the way across up to an altitude of 1,425 meters (4,700 ft.) and straggling on singly and in little clumps up to and over the summit at 1,550 meters (5,100 ft.) and down on the west side for about five miles to an altitude of 1,225 meters (4,000 ft.) below which they occur in scattering groves all the way down to and into Kern Valley. The total length of the yucca strip in the pass proper is 11 or 12 miles.

Several young Scott's Orioles were seen and one was secured in these yuccas, and Cactus Wrens and LeConte's Thrashers were tolerably common. The White-rumped Shrike and Ash-throated Flycatcher were found also in the yuccas on the east slope. The following desert shrubs range up on the east slope to about 1,425 meters (4,700 ft.) with the Tree Yuccas: *Hymenoclea salsola*, *Tetradymia spinosa*, *Eriogonum fasciculatum*, *Atriplex canescens*, *Lycium andersonii*, *Ephedra olivaceous* [sic], *Audibertia incana*, *Encelia frutescens*, *Opuntia basilaris*, and *Eriogonum inflatum*. A little lower down *Tetradymia comosa*, *Grayia* [*spinosa*], and *Argemone* [*platyceras*] were noticed. At 1,425 meters (4,700 ft.) the true sagebrush begins and ranges up over the pass, accompanied by the Nut Pine (*Pinus monophylla*), *Ephedra* [*viridis*], and *Bigelovia douglassii*. On the summit of the pass we saw for the first time a small tree 20–25 feet in height, bearing large and handsome flowers. It is the [*Fremontodendron*] *californicum* and reaches the summit of the pass from the west slope of the Sierra, where it is abundant. [*Kunzia*] *tridentata* also was found at the summit.

The east slope of Walker Pass is a straight and gradual slope, facing a little south of east, and is an excellent slope for east side altitudes. The west side of the pass is tortuous and complicated and not of much value in determining altitudes. A gale from the west blew up the pass during the evening and continued throughout the night and all the following day.

We left camp at Canebrake Creek at 7 A.M., descended the remainder of the pass into the valley of Kern River, which we followed to the junction of the north and south forks, at which point we crossed and camped about a mile from the town of Kernville on the west side of the North Fork of Kern River, having traveled 27 miles. Both forks of the Kern were so flooded by the melting snows in the mountains that we could not cross by the fords, but had to go around in order to cross by the bridge. About a mile below Canebrake Creek the pass expands into a basin a mile or mile and a half wide by two and a half miles in length, containing several groves of Tree Yuccas in the bottom (at an altitude of about 900 meters or 3,000 feet). The open cañon of Walker Pass gradually widens as it descends into Kern River Valley, where there are numerous ranches. The mountains on both sides are moderately high and scantily clothed with Coulter Pines and junipers.

The California Jay (*Aphelocoma californica*) was first seen on the west slope of Walker Pass, and was afterwards one of the common birds along the west slope of the Sierra and throughout the Coast Ranges.

In descending Walker Pass to Kern River Valley we were very much surprised to find that the great majority of the desert species of plants and animals ranged throughout the pass and covered the valley of the Kern River.

On the south side of Kern Valley, at an altitude of 825 meters (2,700 ft.) or even lower, the following plants were observed: *Tetradymia spinosa*, *T. comosa*, *Lycium andersonii*, *L. cooperi*, *Hymenoclea salsola*, *Audibertia incana*, *Ephedra olivaceous* [sic], *Eriogonum fasciculatum*, *Bigelovia douglassii*, *Opuntia echinocarpa*, *Opuntia basilaris*, and *Argemone* [*platyceras]*. On an adjoining steep north slope the following species come down from the mountain sides to about the same altitude (825 meters or 2,700 feet): [*Fremontodendron*] *californicum*, *Ceanothus*, *Prunus fasciculata*, *Artemisia tridentata*, *Quercus*, and *Cercis occidentalis*. The true alder (*Alnus rhombifolia*), a fine tree 30 feet or more in height, is common along both forks of the Kern and streams emptying into them, along with willows and cottonwoods. The cottonwood found here is *Populus fremontii*.

LeConte's Thrasher was found on the east side of Walker Pass, and the Cactus Wren ([*Heleodytes*] *brunneicapillus*) was common in the Tree Yuccas and arborescent cactuses (*Opuntia echinocarpa*) down to 825 meters (2,700 ft.), where dozens of their large nests were seen in the cactuses. A mixture of the desert species with those inhabiting the west slope of the Sierra occurs here. The California Jay (*Aphelocoma californica*), [California] Towhee (*Pipilo fuscus crissalis*), and [Fisher's Ground Squirrel] ([*Citellus*] *beecheyi* [*fisheri*]) were common. The Whip-tail Lizard (*Cnemidophorus* [*tigris*]) was also common, and *Crotaphytus wislizenii* was obtained near the forks of the Kern and thence southerly to Walker Basin.

At Kernville, June 23, we saw the following birds: *Sayornis nigricans*, *Merula migratoria propinqua*, *Chondestes grammacus strigatus*, *Contopus richardsonii*, *Colaptes cafer*, *Icteria virens longicauda*, *Icterus bullocki*, *Sayornis saya*, *Vireo gilvus swainsoni*, *Tyrannus verticalis*, *Carpodacus mexicanus frontalis*, *Dendroica aestiva*, *Buteo swainsoni*, *Scolecophagus cyanocephalus*, *Petrochelidon lunifrons*, and *Zenaidura macroura*.

Kernville is situated in the lower edge of the juniper belt, and *Pinus coulteri* comes down to the same level.

The characteristic yucca of the Coast Ranges of California (*Yucca whipplei*) is common on the hillsides on both sides of Kern River Valley and is now in full flower.

A Swainson's [Hawk] (*Buteo swainsoni*) was shot at the forks of Kern River.

A form of [Fisher's Ground Squirrel] characterized by conspicuous silvery patches on the sides of the neck and shoulders was common in the lower part of Walker Pass and throughout much of Kern River Valley.

Leaving the forks of Kern River June 23, we proceeded southward to the small town of Havilah, 15 miles south of Kernville, at an altitude of 900 meters (3,000 ft.). Havilah is in a small valley on the west slope of the Sierra and is surrounded by mountains covered by juniper, live oaks, and Coulter Pines. In the pass between Kern River Valley and Havilah, and on the north side of the divide (the summit of which attains an altitude of 1,125 meters or 3,700 feet) a total change in the character of the vegetation takes place. The Great Basin species which descend through Walker Pass to the Kern River Valley disappear, and the side hills are covered with the characteristic vegetation of the Coast Ranges of California. A dense chaparral covers much of the region and consists mainly of scrub oaks, *Ceanothus*, *Cercocarpus* [*parvifolius*], mixed with California Chestnut (*Aesculus californica*), a small tree then in bloom. In the brush on the side hills between Kern River Valley and Havilah we saw for the first time the handsome [Kern Basin] Chipmunk ([*Eutamias*] *merriami* [*kernensis*]). Grasshoppers were enormously abundant in Kern River Valley and we saw many Ravens feeding on them.

The abrupt change from the desert vegetation to that on the west slope of the Sierra was explained by the dense fog which rolled in from the Coast Ranges and enveloped our camp at Havilah on the morning of June 24. These fogs are of almost daily (or rather nightly) occurrence, and are so dense that they cover the vegetation and all exposed objects with heavy drops of water as if left by a rain.

Leaving Havilah at 7 A.M. on the morning of June 24 we continued southerly, winding among high hills and climbing a road to the summit of a high divide (altitude 1,250 meters or 4,100 feet) from which we looked back into Havilah Valley on the north, and down into the much larger Walker Basin on the south. Descending thence into Walker Basin we passed out at the west end and ascended another high divide, covered with large live oaks but devoid of undergrowth (altitude of summit 1,175 meters or 3,850 feet), and then descended by a very long grade, winding down the steep hills and making several nearly complete loops, to the small town of Caliente at the foot of Tehachapi Pass—a most forlorn and desolate looking place, consisting of a station, saloon, so-called hotel, and two or three inhabited houses. The altitude of Caliente by my barometer was 425 meters (1,375 ft.). We then ascended the north slope of Tehachapi Pass [(Plate XVIII)] to an altitude of 800 meters (2,650 ft.) and camped about four miles south of Caliente.

Walker Basin is an open meadow with a marshy stream flowing through it and many tules along its course. The surrounding hills are covered with live oak (*Quercus* [sp.]).

We saw here for the first time the handsome California Woodpecker (*Melanerpes formicivorus bairdi*) and Lewis's Woodpeckers (*Melanerpes torquatus*) and passed through a large colony of [Fisher's Ground Squirrels] ([*Citellus beecheyi fisheri*]).

The Ash-throated Flycatcher was common among the oaks, and the large California [Gray] Squirrel (*Sciurus* [*griseus griseus]*) was found there also. A few nests of woodrats were seen in the low trees and probably were built by the Brown-footed Woodrat (*Neotoma fuscipes*) [sic?].

The high hills between Walker Basin and Caliente are covered with an open growth of fine live oaks without undergrowth. The road in descending to Caliente follows a gorge full of beautiful trees and underbrush. Sycamores (*Platanus* [*racemosa*]) begin at 825 meters (2,700 ft.) and reach down to the valley near Caliente. Scrub

oak (*Quercus* sp.), *Ceanothus*, *Ribes*, *Rhus aromatica* [sic], *Rhus diversiloba*, and *Aesculus californica* were common, with [*Fremontodendron*] *californicum* and *Yucca whipplei* in places, particularly on the higher hillsides.

California Jays, Black Phoebes, brown towhees, and the California Thrasher (*Harporhynchus redivivus*) were seen along the route, and flocks of *Polioptila* and *Psaltriparus* were common in the chaparral.

The distance by our odometer from Caliente to Kernville is 39 miles, and from Caliente to Havilah 24 miles.

On the morning of June 25 we continued the ascent of Tehachapi Pass by means of an excellent road without any steep grades. Most of the hillsides are covered with scattering oaks, though much has been cut off for fuel. Tehachapi Pass is about 1.5 miles in length and its upper or south end opens into a broad and fertile basin, known as Tehachapi Valley, which is about 10 miles in length by three or four miles in average breadth. It contains many scattered ranches with fine fields of ripening grain, besides the thriving town of Tehachapi on the railroad. There is a salt lakelet at the east end which becomes dry in the summer. The valley is surrounded by low mountains with a few higher ones covered with oaks and pines. An open cañon or broad wash about seven miles in length leads from the southeast end of the valley down to the Mohave Desert, just north of the railroad town of Mohave. A railroad station at the upper end of this cañon is named Cameron (altitude of 1,150 meters or 3,800 feet).

The following desert plants come up from the Mohave Desert through this cañon and were seen in Tehachapi Valley: *Atriplex canescens*, *Lycium cooperi*, *Ephedra* [*viridis*], *Eriogonum fasciculatum*, *Opuntia basilaris* (still in flower), and *Bigelovia douglassii*. The latter is hardly a desert species as it runs up into the sage and juniper about the border of the desert. The summit of the passes at both ends of Tehachapi Valley are about 1,150 meters (3,800 ft.) in altitude. Near the west summit are a number of large oaks, one of which measured 19 feet 1 inch in circumference six feet above the ground.

The wind blew such a gale from the northwest while we were passing through Tehachapi Valley that we saw no reptiles and but few birds.

On June 26 we broke camp at Cameron at 7 A.M., followed the cañon down to the Mohave Desert and reached the town of Mohave (distant 12 miles) at 10:30 A.M. From Mohave we turned southwesterly into the west arm of the Mohave Desert, known as Antelope Valley, and traveled 16 miles further, camping at Willow Spring, having traveled in all 30 miles.

The [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) was common through out the entire length of the cañon leading from the Mohave Desert to Cameron, and the following desert shrubs were observed: *Tetradymia comosa*, *Atriplex canescens*, *Ephedra* [*viridis*], *Encelia frutescens*, *Hymenoclea salsola*, [*Opuntia*] *echinocarpa*, *Eurotia lanata*, *Lycium andersonii*, *Salazaria mexicana*, and Tree Yuccas. Tree Yuccas began at the upper end of the pass and reach down all the way through the cañon, the length of which is six or seven miles, whence they extend out on the Mohave Desert to 3,000 feet, and reach both east and west along the north edge of the desert as far as one can see. Both *Pinus monophylla* and *Juniperus californica* come down into the sides of the cañon in places, and on one north exposure *Juniperus californica* was found growing with the Tree Yuccas. *Yucca whipplei* (mostly past flowering) covers a small stretch in the cañon at about 1,075 meters (3,500 ft.).

Cactus Wrens, Mocking Birds, White-rumped Shrikes, Black-throated Sparrows, and Leopard and Whip-tail Lizards were seen in the pass. This pass or cañon leading from Tehachapi Valley to the Mohave Desert is an open, flat-bottomed wash with barren rounded hills on both sides. It is about seven miles in length and the altitude of its upper end is between 1,100 and 1,125 meters (3,600 and 3,700 ft.), that of the lower end 950 meters (3,100 ft.).

Larrea and *Franseria* enter the mouth of the cañon, the former stopping at 950 meters (3,100 ft.), the latter ranging about 150 feet higher. In parts of the cañon we found a species of brush not seen in the desert region, namely *Isomeris*, which at this time contained both yellow flowers and large inflated pods. Considerable areas of the desert near Mohave were yellow with *Eriogonum* [*trichopes*], a species which resembles *E. inflatum* but is smaller and has less swollen stems. *Lycium cooperi* was common throughout the pass and over the higher levels of the desert.

Our route from Mohave to Willow Spring lay through the yuccas and *Larrea* nearly all the way. There is very little variety in this part of the desert, the soil being mostly sandy, and the desert shrubs, aside from *Larrea*, being *Franseria dumosa*, *Lycium andersonii*, *L. cooperi*, *Grayia*, *Tetradymia comosa*, *Hymenoclea salsola*, and *Ephedra olivaceous* [sic].

The Whip-tail, Gridiron-tail, and Leopard Lizards were common.

The only birds seen were LeConte's Thrasher, Cactus Wrens, White-rumped Shrikes, and a pair of Arkansas [Kingbirds]. At Willow Spring in the evening we saw Killdeer Plover and Texas Nighthawks. [Valley] Quail were found here also.

The thermometer registered 112˚ F in the shade at 3 P.M. Several dead [Desert] Coyotes (*Canis latrans* [*estor*]) were found near Willow Spring, evidently having been poisoned for the bounty of $5 which the state of California was foolish enough to offer for their scalps. We found also a dead weasel (*Putorius* [*arizonensis*]) probably killed in the same way. The altitude of Willow Spring, which by the way has no willows in sight, is a little less than 725 meters (2,400 ft.)—the lowest altitude found by us in this part of the desert.

Willow Spring is on the north side of a clay flat which extends several miles westerly and is covered chiefly with *Atriplex polycarpa*, *A. confertifolia*, and *A. lentiformis* in places.

Leaving Willow Spring on the morning of June 27, we continued westerly along the southern edge of the Mohave Desert to a small lake or pond at the head of Antelope Valley, about four miles west of Liebre Ranch, where we camped at 7 P.M., having traveled 30 miles.

Antelope Valley derives its name from the former abundance of [Prong-horn] Antelope here. A few are said to exist here yet. We saw several horns taken from animals killed in July 1889, and we were informed that several were killed last year and that a few were seen [during] the present season. There are several ranches at the foot of the Sierra Liebre Mountains in the eastern part of the valley where the principal crop seems to be a very sparse growth of wheat, the individual stalks being so well spaced that they will not interfere with one another's growth by producing shade. There was much talk of fruit here, of which however we saw no signs except at the old Liebre Ranch, which is surrounded by oaks and is a picturesque nook at the foot of the [Sierra] Liebre Range. Tree Yuccas and Creosote Bush stretch westerly from Mohave to a point about four miles east of Liebre Ranch along the middle and north part of the desert, but do not reach so far west on the south side of the valley, where the north slope exposure is too cold for them.

Several broods of [Valley] Quail were seen, and a nest containing two half-grown young of LeConte's Thrasher was found in an arborescent cactus. The Yucca Lizard (*Sceloporus yuccae* [sic]) was common among the yuccas, living in the trees, and Whip-tail and Leopard Lizards were common. The Gridiron-tail Lizard (*Callisaurus* [*ventralis*]) was not observed within 10 miles of Liebre Ranch.

The California Coast Range flora, as distinguished from the desert flora, comes over the Sierra Liebre Range from the south and descends on the north side of these mountains to their very bases at an altitude of 1,150 meters (3,800 ft.) east of Liebre Ranch and thence westerly to the extreme end of the valley. To the east of Liebre Ranch it does not reach the valley level and probably comes only about half way down the mountains a few miles further east. This flora consists of two kinds of oak trees, Coulter Pine, and junipers with the accompanying characteristic undergrowth.

At Liebre Ranch we saw a colony of [Fisher's Ground Squirrels] ([*Citellus*] *beecheyi* [*fisheri*]) and many Brewer's Blackbirds and Ravens, both of which were engaged in catching grasshoppers, which are now very abundant throughout the grassy part of Antelope Valley. *Bigelovia graveolens* is common in places in the western part of the valley. In the evening McGrath caught a five-toed [Mohave] Kangaroo Rat ([*Dipodomys mohavensis]*) which hopped into camp.

[On] June 28 we broke camp at 6:30 A.M., ascended the hilly slope to [Gorman Station] at the extreme west end of the valley, and descended the famous Cañada de las Uvas to the ruin of old Fort Tejon [(Plate XIX)], where we camped at noon, having traveled 15 1/2 miles. In the afternoon I rode through the remainder of the cañon (five miles) to the edge of the San Joaquin [Valley], which is here known as the Bakersfield Plain. The lake on which we camped the previous night, and which is at the west end of Antelope Valley proper, is about a mile in length and alkaline. On it and on a small pond west of it we saw several night herons, coots, grebes, and a pair of ducks, probably Shovellers.

The foothills on both sides close in at this point, forming a divide 1,000 meters (3,300 ft.) in altitude. The altitude of the lake is 900 meters or 3,000 feet. West of the lake is a hollow containing several very small tule ponds and draining into a cañon on the south, running toward the upper waters of [Piru] Creek. [Gorman Station] is just above these ponds. A short distance west of this ranch is the main divide between Antelope Valley and the Cañada de las Uvas, at an altitude of 1,175 meters (3,850 ft.). The hills here are dotted with *Yucca whipplei* and *Isomeris* [*arborea*]. Here we saw a flock of 44 Ravens—the largest flock I have ever seen—engaged in catching grasshoppers. We saw also two Burrowing Owls (*Speotito cunicularia hypogaea*) also engaged in catching grasshoppers.

The Cañada de las Uvas is a beautiful gorge about 11 miles in length, and is broadest above, where it spreads out into several small basins the largest of which contains Castac Lake which is situated at the forks where Theresa Cañon is given off on the east side of the main cañon. Castac Lake is a handsome body of water surrounded by oaks but was dry when visited by the Wheeler Expedition.

Below Castac Lake the cañon becomes narrower and more tortuous. The mountains on both sides are rounded and grassy, dotted with large oaks and covered in many places with scrub oak, California Buckeye ([*Aesculus*] *californica*) then in full bloom and very handsome, *Rhamnus californica*, *R. crocea*, *Cercocarpus parvifolius*, *Rhus diversiloba*, and *Eriodictyon tomentosum*. On the higher mountain sides [*Fremontodendron*] *californicum* was still in flower, and we saw a few clumps of manzanita (*Arctostaphylos* sp.). *Bigelovia douglassii* and *Artemisia tridentata* were common in the upper part of the Cañada de las Uvas above Castac Lake. A fine stream traverses the bottom below Castac Lake and is bordered throughout the lower part of its course by the Box Elder ([*Acer negundo*]) mixed with willows and oaks. [*Citellus beecheyi*] is profusely abundant throughout the entire length of the cañon and up over the summit of the pass, and thence easterly to the west end of Antelope Valley as far as Liebre Ranch. The young were of various sizes from less than half-grown to two-thirds the size of their parents, and were very unsuspicious. Dozens were in sight at once and, many could be killed without the slightest difficulty with the 22-caliber auxiliary. The handsome [Merriam's] Chipmunk ([*Eutamias*] *merriami*

[*merriami*]) was common in parts of the cañon. The altitude of the summit of the Cañada de las Uvas is 1,175 meters (3,850 ft.) while that of its mouth is 550 meters (1,800 ft.). Looking north from the mouth of the cañon, the San Joaquin [Valley] looks hot and forbidding. The atmosphere was so hazy that little could be seen besides the Sierra Nevada, which was indistinctly visible on the right. Looking north and northwest, nothing could be seen but the desert [in that valley], vanishing in the distant haze and the hot air rising in wavy undulations. No wonder that the early expeditions sought this beautiful cañon with its majestic oaks and luxuriance of verdure—a veritable strip of paradise between two hells—the Mohave Desert at one end and the upper San Joaquin Desert at the other. Old Fort Tejon is picturesquely situated at the mouth of a small cañon coming into the main cañon from the west and consists of deserted adobe ruins—the home of bats and barn owls. The White Oaks (*Quercus lobata*) here attain gigantic dimensions. Many are upwards of 20 feet in circumference a meter above the ground, and one measures 24 feet 4 inches. A colony of [Western] Martins (*Progne* [*subis hesperia*]) was found breeding in deserted woodpecker holes in these huge oaks and dozens of them were constantly seen flying to and fro carrying insects to their young. *Vireo solitarius cassinii* in worn breeding plumage was obtained here and was of special interest because old Fort Tejon is the type locality of the species.

In the evening I shot three large [Pacific Pallid] bats (*Antrozous pallidus* [*pacificus*]) and several [*Myotis californicus*]. Barn Owls were common and noisy about camp in the evening and throughout the night.

On the afternoon of June 29 I left camp at old Fort Tejon accompanied by Mr. T.S. Palmer, and spent the night near a small pond two miles east of the ranch at [Gorman Station] in order to obtain an early start the next morning in crossing the Sierra Liebre Range.

On the morning of June 30 we left the little pond two miles east of [Gorman Station] at 5:30 A.M. and crossed the Sierra Liebre Range, arriving at the railroad switch known as Castac, at 6 P.M., having ridden about 36 miles. The small ponds and springs just below [Gorman Station] drain south into a cañon which passes through the Sierra Liebre, and lower down probably becomes a part of the cañon of [Piru] Creek. An old wagon road follows this cañon about 12 miles to Alamo Ranch~~, which is now occupied by an ignorant Mexican~~. Thence southward for about five miles on a rough and rocky trail, wholly obliterated for two-thirds of the way, through a narrow cañon in which a rapid stream rushes swiftly over a stony bottom. After descending to an altitude of 600 meters (2,000 ft.) or a little below, the trail made a sudden turn to the east and southeast, climbing up and down many high hills and culminating in a main divide at 850 meters (2,800 ft.), whence it descends rapidly, and often almost perpendicularly, into a narrow cañon, which, about five miles north of the railroad, becomes a narrow defile hardly eight feet in width at the bottom and with the side walls so near together that the sun did not shine in at 3 P.M. Below this gorge the cañon widens and becomes a wash which joins Castac Creek Cañon just below its mouth. Throughout the entire distance the mountain sides from top to bottom are densely covered with chaparral, so dense in most places it would be impossible to get a horse a few rods off from the trail. The trail abounds in steep zigzag pitches and is washed out and nearly obliterated from long disuse.

The upper part of the wash leading south from near Gorman [Station] contains several clumps of Tree Yuccas at an altitude of from 850 to 900 meters (2,800–3,000 ft.), the total length of this strip in the wash being less than a mile and a half.

True sage (*Artemisia tridentata*) begins with the Tree Yuccas at 900 meters (3,000 ft.) and descends to 750 meters (2,500 ft.). The side-hills are covered with juniper, scrub oak, and clumps of *Yucca whipplei*, while in the bottom of the wash *Bigelovia graveolens* and *Isomeris* [*arborea*] are mixed with the Tree Yuccas and sage.

Cactus Wrens and thrashers were common in the Tree Yuccas, but the thrasher was not the LeConte's Thrasher (*Harporhynchus lecontei*) with which we have been associated for so many months, but the common Californian species (*H. redivivus*).

Many Whip-tail Lizards (*Cnemidophorus* [*tigris*]) were seen there also.

In this same wash *Atriplex canescens*, *Eriogonum fasciculatum*, and *Audibertia incana* were abundant in places, and lower down the so called white or honey sage (*Audibertia alba*) [sic] became common. The true California chemise or chemisal (*Adenostoma fasciculatum*) begins north of Alamo Ranch at an altitude of 725 meters (2,400 ft.) and thence southward is the prevailing chaparral. It was in full flower the last of June and was mixed with other characteristic Coast Range bushes, among which may be mentioned *Heteromeles arbutifolia*, *Rhus aromatica* [sic], *Ceanothus*, *Cercocarpus parvifolius*, *Rhamnus crocea*, and scrub oaks. The scrub oaks were particularly abundant, in actual bulk equaling all the undergrowth together, not excepting the chemise. Toward Castac Valley some dwarf ashes (*Fraxinus* sp.) were seen, and [*Mimulus glutinosus*] was common on the shady sides of the rocky cañon. A few fir trees, probably *Pseudotsuga macrocarpa*, were seen on the west side of the cañon just below Alamo Ranch.

The [Sierra] Liebre Range where we crossed it is practically devoid of trees and completely covered from top to bottom with a dense undergrowth [of] impenetrable chaparral.

In the Santa Clara and lower Castac valleys *Opuntia engelmanni* and *O. bernardina* were abundant. Many nests of Cactus Wrens were seen in them, particularly in the tall *O. bernardina*. Both species are common from four miles north of the railroad (at an altitude of 325 meters or 1,100 feet) southward. Near Alamo Ranch we saw [Plumed] Quail (*Oreortyx pictus plumiferus*), two Road-runners (*Geococcyx californianus*), and the Golden Eagle (*Aquila chrysaetos*). The Cañon Wren (*Catherpes mexicanus conspersus*) was heard in the cañon below Alamo Ranch, and Black Phoebes (*Sayornis nigricans*), Phainopeplas (*Phainopepla nitens*), California Jays (*Aphelocoma californica*), Black-headed Grosbeaks (*Habia melanocephala*), and the [California] Towhee (*Pipilo fuscus crissalis*) were common all along.

The mouth or lower part of Castac Creek, at or near its junction with the Santa Clara [River], is believed to the real type locality of the remarkable Long-eared Bat (*Euderma maculata*) recently described by Dr. A. Allen.

Mr. Palmer led my horse back from Newhall to old Fort Tejon, whence the outfit crossed the Bakersfield Plain to Visalia, where I expected to join them to begin work in the High Sierra. But I was unexpectedly ordered to the Bering Sea, and the season's work was completed under Mr. Palmer's direction.

ALTITUDES (IN FEET)

Alvord, California, opposite Big Pine, Owens Valley 3,956
Antelope Valley, base of Sierra Liebre near Liebre Ranch 3,800
Antelope Valley, lakelet at west end 3,000
Ash Meadows, Nevada, King Spring 800
Ash Meadows, Nevada, northernmost spring in 3,900
Beaver Dam Creek, Arizona, mouth of 1,950
Beaver Dam Mountains, summit of pass 4,900
Bennett Spring, Nevada, west side of Meadow Creek Valley 6,000
Big Pine, Owens Valley, California 3,658
Bitter Springs, Nevada, Muddy Mountains 1,900
Cajon Pass, California, summit 4,000
Caliente, California 1,375
Cameron, California 3,600

Cañada de las Uvas, California, upper end, south end....3,850
Cañada de las Uvas, California, lower end, north end....800
Cañon:
between Indian Spring Valley and Amargosa, Nevada, east end....3,500
between Indian Spring Valley and Amargosa, Nevada, west end....3,350
between Oasis Valley and Sarcobatus Flat, Nevada....4,800
between Tehachapi Valley and Mohave, California, north end....3,700
between Tehachapi Valley and Mohave, California, south end....3,100
Emigrant, Panamint Mountains California, north end, facing Mesquite Valley....3,000
Emigrant, Panamint Mountains, California, south end, Perognathus Flat....5,200
Grapevine, Nevada, divide in, near east end....4,500
Grapevine, Nevada, near upper or east end at Thorp's Mill....4,400
Hyko, Nevada, lower end, Pahranagat Valley....4,200
Hyko, Nevada, upper end, Pahroc Plain....4,600
Tule (south side) of Mount Magruder, Nevada, where trail enters from Gold Mountain....5,900
Charcoal Kilns, Panamint Mountains, California....7,500
Charleston Mountains, divide near Mountain Springs....5,650
Charleston Mountains, Nevada, near Mountain Springs....5,600
Charleston Peak, about....11,000
Colorado River at Great Bend, near Callville....1,000
Cottonwood Springs, east foot of Charleston Mountains, Nevada....3,500
Daggett, Mohave Desert, California....2,000
Deep Springs Valley, California, about....5,300
Desert Valley, Nevada, dry lake, about....5,200
Diamond Valley, Utah....4,800
Divide:
between Antelope Valley and Cañada de las Uvas....3,850
between Havilah and Walker Basin....4,100
between Kernville and Havilah....3,700
between Paradise Valley and Daggett....4,000
between Salt Wells Valley and Indian Well on Mohave Desert, about....3,500
between Walker Basin and Caliente, California....3,850
Charleston Mountains near Mountain Springs....5,650
Granite Mountains, road crossing....4,600
in Grapevine Cañon near Thorp's Mill, about....4,500
in Indian Spring Valley, Nevada, near west end, between Indian Spring and Ash Meadows....4,000
in Leach Point Valley, California, just west of spring....3,000
in Leach Point Valley, California, Owl Holes and Saratoga Spring....2,100
Mountain Meadows, Utah....6,100
Muddy Mountains, Nevada, summit of divide on Mormon road....2,500
Pahranagat Valley, Nevada, divide at south end....3,900
Walker Pass, California, summit of divide....5,100
White Mountains, California, between Deep Spring and Fish Lake valleys....6,750
White Mountains, California, between Deep Spring and Owens valleys....7,700
Dry Lake:
Desert Valley, Nevada, about....5,200
Indian Spring Valley, at base of north arm....3,500
Leach Point Valley, between Leach Point Valley and Owl Holes....2,000

Paradise Valley, Mohave Desert 3,000
Emigrant Cañon, California, north end, Panamint Mountains 3,000
Emigrant Cañon, California, south end, at Perognathus Flat 5,200
Emigrant Spring in Emigrant Cañon 4,400
Emigrant Valley, Nevada, approximate 5,000
Escalante Desert, Utah, south end 5,700
Fish Lake Valley, Nevada, south end, about 5,300
Forks of Kern River, California 2,600
Gold Mountain, hill west of 6,600
Gold Mountain, Nevada, highest point of ridge road crossing 7,400
Gold Mountain or Stateline mining camp 6,100
Granite Mountain or Pilot Knob, divide at 4,600
Granite Mountain or Pilot Knob, Mohave Desert, California 5,525
Granite Mountain or Pilot Knob, spring 4,200
Grapevine Cañon, Nevada, divide near east end, about 4,500
Grapevine Cañon, Nevada, upper or east end 4,400
Haiwee Meadows, California 3,600
Havilah, California 3,000
Havilah and Kernville, California, divide between 3,700
Highland Peak, Nevada, about 10,000
Highland Range, Nevada, summit of pass 6,400
High Sierra, California, timberline on east slope, about 10,500
Hungry Hill Summit, Nevada 5,850
Hyko Cañon, Nevada, lower end, Pahranagat Valley 4,200
Hyko Cañon, Nevada, upper end, Pahroc Plain 4,600
Independence, Owens Valley, California 3,718
Indian Spring, Nevada 3,750
Indian Spring Valley, dry lake at foot of north arm 3,500
Indian Spring Valley, Nevada, cañon between it and Amargosa, east end 3,500
Indian Spring Valley, Nevada, cañon between it and Amargosa, west end 3,350
Indian Spring Valley, north arm opposite Quartz Spring 4,750
Indian Spring Valley, divide near west end between Indian Spring and Ash Meadows 4,000
Juniper Mountains, Nevada, rolling plateau 6,200–6,800
Juniper Mountains, Nevada, summit of pass 6,800
Keeler, Owens Lake, California 3,604
Kernville, California 2,550
Kernville and Havilah, divide between 3,700
Kern River, forks of 2,000
Kings Spring, Nevada, in Ash Meadows 3,800
Las Vegas, at Las Vegas Ranch 2,500
Las Vegas Ranch 2,300
Leach Point Spring 3,500
Leach Point Valley, between Owl Holes and Death Valley 2,100
Leach Point Valley, divide just west of spring 3,000
Leach Point Valley, dry lake between Leach Point Spring and Owl Holes 2,000
Liebre Ranch, Antelope Valley, California, about 3,800
Little Lake (Little Owens Lake), California 3,100
Little Lake (Little Owens Lake), point 8 miles south of 2,600

Lone Pine, Owens Valley, California 3,658
Mesa, between the Muddy and Virgin rivers, east of Saint Joseph, Nevada 2,150
Mesa, between west of Virgin Valley and 10 miles above Bunkerville 2,450
Mohave, California 2,750
Mohave River at Victor, California 2,750
Mount Magruder, Nevada, main peak about ..... 9,500+
Mount Magruder, Nevada, plateau 7,500
Mount Magruder, Nevada, valley between Magruder and Gold Mountain 5,700
Mountain Meadows, Utah, divide 6,100
Muddy Mountains, Nevada, summit of divide on Mormon road 2,500
Oasis Valley, Nevada, divide between Oasis and Sarcobatus Flat 4,800
Oasis Valley, Nevada, hill on east side near upper end of valley 4,750
Oasis Valley, Nevada, lower end just north of cañon 3,800
Oasis Valley, Nevada uppermost spring on west fork of Amargosa Creek 4,450
Owens Lake, California 3,600
Pahranagat Mountains, Nevada, near summit of pass 6,000
Pahranagat Valley, Nevada, Eiseman's ranch 4,000
Pahranagat Valley, Nevada, divide at south end 3,900
Pahranagat Valley, Nevada, lower end 3,600
Pahroc Spring, Nevada, little less than 6,000
Pahrump Valley, Nevada, Yount's Ranch 2,900
Panaca, Nevada, Meadow Creek Valley 5,400
Paradise Valley, Mohave Desert, divide south of, between it and Daggett 4,000
Paradise Valley, Mohave Desert, dry lake 3,000
Perognathus Flat, Panamint Mountains, California 5,200
Pigeon Spring, Nevada, northwest slope of Mount Magruder 6,700
Pilot Knob or Granite Mountain, Mohave Desert 5,525
Pilot Knob or Granite Mountain, spring at northwest base 4,200
Quartz Spring, Nevada, in cañon at west foot of Desert Mountains 5,200
Quartz Spring, Nevada, in cañon, mouth of 4,900
Resting Springs, California 1,750
Saint George, Utah 3,000
Salt Wells Valley, California, about 2,400
Salt Wells Valley, California, divide between Salt Wells and Indian Well 3,500
Santa Clara River, Upper Crossing, near Pine Mountain, Utah 4,900
Sarcobatus Flat, Nevada, about 4,400
Sheep Spring, Juniper Mountains, Nevada 6,700
Summit or Mud Spring, Nevada, in Desert Mountains 5,600
Spring:
- Ash Meadows, Nevada, King Spring 3,800
- Ash Meadows, Nevada, northernmost spring 3,900
- Cottonwood, east foot of Charleston Mountains, Nevada 3,500
- Emigrant in Emigrant Cañon, California 4,400
- Granite Mountain or Pilot Knob 4,200
- Indian Spring, Nevada 3,750
- Leach Point, California 3,500
- Mud or Summit, Nevada, Desert Mountains 5,600

Oasis Valley, uppermost spring, west fork, Amargosa Creek....4,450
Pahroc, Nevada, little less than....6,000
Pigeon, Nevada, north side of Mount Magruder....6,700
Quartz, Nevada, in cañon at west foot of Desert Mountains....5,200
Resting, California....1,750
Sheep, Juniper Mountains, Nevada....6,700
Willow, California, in Antelope Valley, west end Mohave Desert....2,400
Tehachapi Pass, summit....3,832
Tehachapi Valley, California, cañon leading to Mohave Desert, lower end....3,100
Tehachapi Valley, California, cañon leading to Mohave Desert, upper end....3,700
Timberline on east slope of Sierra Nevada, California, about....10,500
Timpahute Valley, Nevada....4,700
Timpahute Mountains, Nevada, summit of pass....5,750
Tule Cañon, south foot of Mount Magruder, Nevada....5,900
Tule Cañon, where trail enters from east end....5,900
Valley:
Antelope, California, base of Sierra Liebre near Liebre Ranch....3,800
Antelope, California, divide between west end lakelet and Gorman....3,300
Antelope, California, lakelet at west end....3,000
Between Mount Magruder and Gold Mountain....5,700
Deep Spring, California, about....5,300
Desert, Nevada, dry lake....5,200
Diamond, Utah....4,800
Emigrant, Nevada, approximate....5,000
Fish Lake, south end, about....5,300
Indian Spring, dry lake at base of north arm....3,500
Leach Point, dry lake near Owl Holes....2,000
Pahranagat, Nevada, lower end....3,600
Pahrump, Nevada, Yount's Ranch....2,900
Oasis and Sarcobatus Flat....4,800
Oasis, Nevada, lower end just north of cañon....3,800
Salt Wells, about....2,400
Timpahute, Nevada....4,700
Victor, Mohave Desert....2,750
Virgin River, Arizona, 8 miles above Bunkerville....1,750
Virgin River, at mouth of wash from Bitter Springs....1,000
Virgin Valley, Nevada, at mouth of wash from Bitter Springs....1,000
Virgin Valley, mesa west of (Arizona), 10 miles from Bunkerville....2,450
Walker Basin and Havilah, divide between....4,100
Walker Basin, California....2,850
Walker Pass, California, east mouth, about....3,500
Walker Pass, summit of divide....5,100
White Mountains, divide between Deep Spring and Fish Lake valleys....6,750
White Mountains, divide between Deep Spring and Owens valleys....7,700
White Mountain Peak, California....13,500
Willow Spring, California, in Antelope Valley, west end Mohave Desert....2,400
Yount's Ranch, Pahrump Valley....2,900

AREA DESCRIPTIONS

Amargosa Desert, Nevada

The Amargosa Desert is a long and narrow desert crossing the boundary between California and Nevada, immediately east of Death Valley, to which it conforms in direction and from which it is separated by the Funeral Mountains and Amargosa Range. On the east it is bounded by Bare Mountain and the Kingston Range and some irregular nameless ranges northwest of Pahrump Valley. It is highest at the north end (where it reaches an altitude of about 1,150 meters or 3,800 feet) and slopes gradually to the south, its mean altitude being in the neighborhood of 600 meters (2,000 ft.). The dry bed of the Amargosa River traverses it throughout, coming in from Oasis Valley at the extreme northeast corner by means of a short and narrow cañon, whence it curves rapidly to the west, passing southward near the foot of the Amargosa Range opposite the southern part of which it drops into a deep cañon through which it flows for about 16 kilometers (10 miles). It then bends abruptly to the west, rounds the south end of the Funeral Mountains [Black Mountains], traversing the peculiar area known as the Devil's Playground, and finally turns north and enters Death Valley near Saratoga Springs. The distance across the loop from Saratoga Springs westward is about 14 kilometers (nine miles). The bed of the Amargosa is thus more than 160 kilometers (100 miles) in length, but its bottom in most places is as dry and parched as the sands of the adjoining deserts, never carrying water except immediately after cloud bursts or other heavy rains, which it is hardly necessary to add are very infrequent in this region. Running water does occur however, at least in winter and early spring, in three distant places along its course, namely, at its head in the Ralston Desert and Oasis Valley, in its middle portion where it receives the warm water from numerous hot springs in Ash Meadows, and in the cañon at the south end where it is reinforced by Tecopa Spring. The water is drinkable, though alkaline and in places more or less saline. It contains numerous small fishes (the same as those of Saratoga Springs) which must find holes of permanent water in which to remain throughout the summer.

The Amargosa Cañon is chiefly gravel rock and is deepest toward the north where there are high cliffs eroded in places so as to produce columnar forms. The upper part of the cañon receives a side cañon from the west (Tecopa Cañon), immediately below which it cuts through a volcanic mountain of various colors. In this cañon the giant greasewoods (*Atriplex torreyi* and *A. lentiformis*) find the westernmost limits of their ranges, and mesquites (*Prosopis*) are common. North of the Amargosa Cañon is an extensive clayey alkali and borax flat with a high mountain (Eagle Mountain) rising precipitously from the middle of the plain in the north, and badlands-type of surface erosion on the east, near Resting Springs.

Resting Springs are a small number of springs of remarkably good and cool water situated in the clayey 'badlands' on the east side of Amargosa Borax Works 37 kilometers (23 miles) from Saratoga Springs by way of Ibex Wash. Their temperature is 20˚ C (68˚ F) and there is enough water to run a short distance before sinking into the earth. Below the springs is a thicket of mesquite and other brush, partly surrounded by patches of sacaton and salt grass and stretches of alkaline 'self-rising ground'. In the thicket we found the westernmost colony of Verdins or Yellow-headed Tits (*Auriparus flaviceps*) observed by the Expedition. Gambel's Quail also were common at Resting Springs and in Amargosa Cañon, here finding the western limit of their range. A new toad was found at Resting Springs and has been named *Bufo boreas nelsoni* by Dr. Stejneger. The small tree [frog] (*Hyla regilla*) was common there also.

North of the Amargosa Borax Works is 'Ash Meadows', another tract of clayey alkali soil containing many hot springs, some of which are large and deep pools of bluish water from which running streams flow a short distance and then spread out into tule marshes. Salt grass and weeds abound in damp places, forming patches of

green that from their desert surroundings are pleasing to the eye though of little value as feed for horses, and the soil is too strongly impregnated with salt and alkali to be available for farming purposes. The surface between the marshy places is covered with the usual greasewoods and other desert plants that grow on alkaline soils, and the gravel slopes bordering the flats are dotted with dark Creosote Bush (*Larrea*). Ash Meadows takes its name from, and is the type locality of, a small ash tree (*Fraxinus coriacea* Watson, Am. Nat. vol. vii, 1873, p. 302) that grows along the borders of many of the warm springs, where it was first collected by the Wheeler Expedition in 1871. Small willows are tolerably common in the same places, and both species of mesquite occur.

To the northward Ash Meadows passes continuously into the north arm of the Amargosa Desert, which is a broad gravelly plain without water of any kind and covered with Creosote Bush (*Larrea*). It is indeed as good an example of a *Larrea* plain as can be found, the *Larrea* being almost the only conspicuous form of vegetation, though *Lycium cooperi* is common in places, and the little [*Malveopsis*] *rotundifolia* with its beautiful pink globe-shaped flowers is also present. The Creosote Bush here reaches the northern limit of its continuous distribution and is short and stunted. Along the northern end of the [Amargosa] Desert it is dead, probably killed by frost. It occurs still further north in Oasis Valley and Grapevine Cañon, but only in narrow patches on favorable slopes. On the west side of this desert, at the mouths of two broad cañons leading up from the northwest arm of Death Valley, are enormous sand dunes resulting from the overflow of sand storms in Mesquite Valley. One of these dunes is at least two miles in length and apparently two or three hundred feet in height. The north arm of the Amargosa Desert is completely surrounded by mountains except on the south and south east, its western boundary is formed by the Amargosa Range, the eastern by Bare Mountain, and the northern by a low and irregular range connecting the two. At the extreme northeast corner a short cañon opens into it from the narrow Oasis Valley, which latter contains the headwaters of the Amargosa River —unless the northeast branch, a small stream coming in from the Ralston Desert, be considered its true head. This creek disappears in the cañon, which contains the first water after leaving the northernmost spring in Ash Meadows—a distance of 65 kilometers (40 miles). From the mouth of Oasis Valley Cañon the dry bed of the Amargosa [River] curves strongly to the west before turning south near the base of the Amargosa Mountains. It is not probable that water from Oasis Valley ever traverses the entire length of the Amargosa River to enter Death Valley unless in times of phenomenally heavy rains, for the water falling in ordinary storms disappears in the sandy arroyo long before reaching Ash Meadows. At times, however, terrific storms rage over this region and on one occasion members of our own expedition found a large stream, difficult to ford, rushing down the bed of the Amargosa at the borax flat.

As appears from forgoing remarks, the whole of the Amargosa Desert belongs to the lower division or *Larrea* belt of the Lower Sonoran Zone, and its characteristic species are in the main the same as those of Death and Panamint valleys. As already stated, however, it has also a few species that here reach their western limit, e.g., Gambel's Quail and the Yellow-headed Tit.

Argus Mountains, California

The Argus Mountains form the western boundary of Panamint Valley in Inyo County, California. They are a north and south range, beginning in the neighborhood of Darwin and ending at the Borax Flat Borax Works, which is enclosed between the main range and an offshoot known as the Slate Range. The highest point is Maturango Peak, which has an altitude as determined by Wheeler of 2,700 meters (8,844 ft.). Argus Peak near the southern end of the range attains an altitude of 1,925 meters (6,333 ft.) according to the same authority. Two cañons cross the range, connecting Coso Valley on the west with the much lower Panamint Valley on the east. The most northern of these, Shepherd Cañon, was passable for wagons before the great storm in February, 1891. The more southern is named Bendire Cañon in honor of Capt. Bendire, who traversed it in 1867 on his way from Camp Independence in Owens Valley to Saratoga Springs.

Beaver Dam Mountains, Utah

The [Beaver Dam] Mountains in the southwestern corner of Utah are a northern continuation of the Virgin Mountains and are crossed by the Virgin River in a deep cañon, by means of which the river escapes from the Santa Clara Valley to the valley bearing its own name. To the north the mountains are probably continuous with the Juniper Mountains. The [Beaver Dam] Mountains, though not unusually rugged or picturesque, are by far the most attractive of the desert ranges visited by the Expedition not excepting even the interesting Charleston Mountains. The pleasing appearance is due to the variety and beauty of the shrubs and trees that clothe their summits and eastern slopes—the result of less extreme aridity than occurs on the ranges further west. Perhaps they might be considered as an outlier of the great Colorado Plateau rather than a genuine desert range. At all events the luxuriance and diversity of their arborous vegetation cannot but impress the traveler with delight and a sense of relief after traversing the barren deserts of southern Nevada or western Arizona. The higher summits are covered with Yellow Pines (*Pinus ponderosa scopulorum*) while the passes and lower parts of the range bear only the more lowly Nut Pines (*Pinus monophylla*), junipers (*Juniperus californica utahensis*), scrub oaks (*Quercus undulata*), manzanita (*Arctostaphylos pungens*), and a number of handsome flowering shrubs, some of which descend far enough on the west slope to meet the upper edge of an open forest of Tree Yuccas (*Yucca arborescens*). The Tree Yuccas begin at the foot of the mountain slope proper at 700 meters (2,300 ft.) and extend up to 1,350 meters (4,400 ft.), forming a belt eight or 10 kilometers (five or six miles) in width. Here the trees rarely exceed three meters (about 10 feet) in height, and are more scattering than in the Mohave Desert. *Yucca macrocarpa* does not grow here at all, and *Y. baccata* ranges from 1,025 to 1,500 meters (3,400–4,900 ft.).

Water is scarce in the [Beaver Dam] Mountains, but a small spring may be found near the divide a little north of the principal pass leading from the Virgin to the Santa Clara Valley. It is at the head of a narrow gulch bordered with tall bushes—an unusually attractive spot even for the [Beaver Dam] Mountains.

Mountain mahogany of the genera *Cowania*, *Fallugia*, and *Kunzia* (late *Purshia*) are common, particularly on the east slope of the mountains. *Kunzia* had nearly ceased flowering at the time of our visit (May 11). *Fallugia* was just coming into flower and its large white blossoms borne on long peduncles were very conspicuous. And *Cowania* was in the height of flowering, its rich creamy-yellow blossoms growing in such profusion as to almost conceal the foliage, producing a magnificent effect when in large masses. The yellow-flowered barberry (*Berberis fremontii*) was also in full bloom, as was the superb *Yucca baccata*. The Utah mescal (*Agave utahensis*) is common in places on the west side of the range, and the Mormon almond (*Prunus fasciculata*) abounds.

The [Say's Rock Squirrel] ([*Citellus variegatus*] *grammurus*) finds the western limit of its range in the [Beaver Dam] Mountains and their northward continuation, the Juniper Mountains. The gray [Utah Cliff] Chipmunk ([*Eutamias*] *dorsalis utahensis*) lives here also, and the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) is common on both slopes and throughout the lower passes. The rare Scott's Oriole (*Icterus parisorum*), never before suspected to occur so far north, inhabits the juniper belt, in company with the Piñon and Woodhouse's Jay (*Cyanocephalus cyanocephalus* and *Aphelocoma woodhousei*), Spurred and Green-tailed Towhees (*Pipilo maculatus megalonyx* and *P. chlorurus*), [Lead-colored Bush]-tit (*Psaltriparus plumbeus*), Brewer's Sparrow (*Spizella breweri*), and [Ash-throated] Flycatcher and Say's [Phoebe] (*Myiarchus cinerascens* and *Sayornis saya*). On the west slope Cactus Wrens ([*Heleodytes*] *brunneicapillus*) and LeConte's Thrashers (*Harporhynchus lecontei*) range up in the Tree Yuccas and arborescent cactuses nearly or quite to the divide in the lower passes (1,525 meters or 5,000 feet altitude). The armor plated Whip-tail Lizard (*Cnemidophorus tigris*) is abundant on both slopes and in the main pass, and the Leopard Lizard (*Crotaphytus wislizenii*) ranges nearly or quite as high.

The plant belts of the Upper and Lower Sonoran Zones show to excellent advantage on the west slope of the [Beaver Dam] Mountains. Beginning at the bottom, the desert species of the Virgin River and [Beaver Dam] Creek valleys cover the broad gravel slope at the foot of the range, the *Larrea* belt (with its accompanying *Franseria dumosa* and *Krameria parvifolia*) reaching up to about 1,150 meters (3,800 ft.). The *Grayia* belt, or upper division of the

Lower Sonoran Zone reaches to 1350 meters (4,400 ft.) or a little higher, and comprises *Yucca arborescens*, *Coleogyne ramosissima* (which here ranges higher than the others), *Ephedra nevadensis*, *Hymenoclea salsola*, *Salazaria mexicana*, *Thamnosma montana*, *Lycium* (*pallidum*?), *Opuntia echinocarpa*, *O. acanthocarpa*, *Echinocactus wislizeni*, and *Yucca baccata* (which with *Coleogyne* ranges somewhat higher than the others).

The Upper Sonoran Zone begins at about 1,350 meters (4,400 ft.) with the true sagebrush (*Artemisia tridentata*), which is almost immediately invaded by the characteristic desert range shrubs and small trees of this zone, namely *Juniperus californica utahensis*, *Ephedra viridis*, *Pinus monophylla*, *Berberis fremontii*, *Prunus fasciculata*, *Rhus trilobata*, *Kunzia tridentata*, and *Agave utahensis*.

Owing to the effects of slope exposure the boundary between the Upper and Lower Sonoran Zones are fully 250 meters (800 ft.) higher on the west than on the east side of the range. The west slope is not only hotter but is more arid than the east, for which reason the Upper Sonoran shrinks, in addition to being forced up higher, [and some species] are more scattering and others are altogether absent. For instance, the scrub [illegible] manzanita, *Garrya*, Service Berry, *Ceanothus*, and [illegible] of the genera *Cowania* [*mexicana*], and *Fallugia* were not observed on the west though abundant on the east slope. Still lower down on the east slope, where it dips into the beautiful Santa Clara Valley many other species occur, among them two kinds of small ash trees (*Fraxinus anomala* and *F. coriacea*), the desert willow (*Chilopsis* [*linearis*]), the Box Elder (*Acer negundo*), and dwarf locust (*Robinia neomexicana*).

Borax Flat, California

The name Borax Flat or Searl's Borax Flat is commonly applied to a large alkali or borax sink on the north side of the Mohave Desert, and partly enclosed between the Argus Mountains and Slate Range, the latter separating it from Panamint Valley. Searl's Borax Flat Borax Works, now in operation, are situated on the west side of the flat near the north end and are connected with the outside world by means of a long wagon road leading across the desert to the Atlantic and Pacific Railroad at Mohave. On the mountainside near the borax flat Mr. Searl has constructed a terraced garden that bears his name and is a feature of the region. The flat is in the lower division of the Lower Sonoran Zone.

Charleston Mountains, Nevada

The Charleston Mountains are the highest mountains in southern Nevada. They consist of an 'L'-shaped range with a high peak near the angle. The summit of the peak attains an altitude of about 11,000 feet. Another conspicuous though lower peak is Potosi Mountain or Mount Olcott, which is situated about 23 miles south of Charleston Peak. These mountains are noticeable in southern Nevada from the circumstance that they are the only range bearing forests of Yellow Pine (*Pinus ponderosa*). Standing as they do on a Lower Sonoran plain and reaching high enough to possess all the different zones from the Lower Sonoran to the Hudsonian and occupying an isolated position, they are of necessity the most interesting mountains biologically in southern Nevada. Unfortunately, they are so far to the eastward of the region of which a careful biological survey was undertaken, that they were not worked up thoroughly though they were twice visited hastily. No work was done at all above the piñon belt, though Mr. Palmer and Mr. Colville climbed up to the snowline in the winter time far enough to pass through the Yellow Pine belt into the Bristle-cone Pines (*Pinus aristata*) where they found also a spruce. The last of April I took the altitudes of the various species of zone plants [in feet] that were found on the west [or southwest] slope of the Charleston Mountains opposite Mountain Springs, which is just north of Potosi Mountain, with the following results:

Species	Lower Elevation	Upper Elevation
Yucca baccata macrocarpa [sic]	3,200	3,600
Yucca [*arborescens*]	3,500	5,000
Yucca baccata	4,700	5,900+
Krameria parvifolia	3,000?	4,400
Larrea [*tridentata*]		4,400
Franseria dumosa		4,400
Ephedra nevadensis		4,500
Menodora [*spinescens*]		5,000
Salazaria mexicana		5,200
Coleogyne ramosissima	4,400	6,000
Tetradymia spinosa	4,400	5,300
Thamnosma montana	4,400	6,000
Astragalus (purple)	4,400	5,400
Ephedra viridis	4,700	6,000+
Fallugia paradoxa	4,700	5,600
Prunus fasciculata	4,700	5,900
Audibertia (small leaved)	5,000	5,800
Juniperus californica	5,100	6,000+
Pinus monophylla	5,100	6,000+
Cowania mexicana	5,100	6,000+
Artemisia tridentata	5,100	6,000
Rhus aromatica [sic]	5,100	5,800
Ceanothus [*greggii*]	5,100	5,800
Cereus mojavensis	5,100	6,000+
Opuntia rutila	5,100	6,000+
Opuntia engelmanni (big pads Colorado River form)	5,500	5,700
Agave utahensis	5,800	6,000+
Amelanchier	5,500	5,800
Berberis [*fremontii*]	5,500	5,800
Quercus gambelii	5,000	5,800
Garrya (willow like bush 5 feet high)	5,500	5,800
Atriplex canescens		5,600
Fraxinus	5,300	5,800

The Charleston or Yellow Pine Mountains are an exception among the barren mountains of southern Nevada, being plentifully clothed with juniper and Pine Nut, and bearing upon the more elevated portions a forest of *Pinus ponderosa*, with spruces and firs on the main peak, the summit of which is covered with snow about two-thirds of the year. During the present season, 1891, snow remained nearly if not quite until July.

The agave or mescal (*Agave utahensis*) is common in the neighborhood of Mountain Springs and large mescal pits, many of them twenty feet or more in diameter and four feet in depth and which the Indians used to burn the roots of the plants, were found in various places in the vicinity. In a limestone cañon a little east of the summit a beautiful Judas Bush (*Cercis*) was common and in full bloom at the time of our visit.

The Scott's Oriole (*Icterus parisorum*) was among the most interesting birds found in the piñon zone on this mountain. The east slope of the range is disappointing from the standpoint of zone work, because the slopes are very much complicated by projecting hills and cliffs. *Yucca baccata* begins at 5,000 feet and descends to the level of the upper part of the valley at 4,000 feet. *Yucca grandiflora* [sic] passes over the summit of the divide from the west side and descends to 4,400 feet where it is mixed with *Yucca baccata*.

Coso Mountains, California

The Coso Mountains consist of an irregular mass of hills and low mountains rising from a plateau between Owens Lake and Coso Valley. The highest point, Coso Peak, reaches an altitude of 2,550 meters (8,425 feet, Wheeler). The whole region is sufficiently high to be clothed with a more or less abundant growth of Tree Yuccas (*Yucca arborescens*), and the higher hills are sparingly covered with juniper and Nut Pine.

Coso Valley, California

Coso Valley is a small valley or plateau immediately south of Darwin and nearly enclosed by mountains. It lies between the Coso Mountains on the west and the Argus Mountains on the east, and is partly covered with an open forest of Tree Yuccas. The remains of an abandoned mining camp known as Coso are on the west side. A good spring known as Maturango Spring is situated on the eastern side of the valley not far from the upper end of Shepherd Cañon, which cuts through the Argus Mountains to Panamint Valley.

Death Valley, California

Death Valley is a gigantic chasm or gorge about 130 miles in total length and averaging scarcely more than eight or 10 miles in breadth. It is walled in on both sides by lofty mountain ranges—the Panamint Range on the west (including its northern continuation, Tin Mountain, and the several calico peaks); and by the Funeral Mountains–Amargosa Range on the east (with their northward continuation known as the Grapevine Mountains and Gold Mountain). At the north the ranges on the two sides of the valley meet at Mount Magruder, Nevada. At the south, the range on the east side ends a little south of Saratoga Springs, and the mountains on the opposite (west) side terminate at the [Avawatz] Mountains a few miles further south. The cañon of Furnace Creek forms the boundary arbitrarily agreed upon as separating the Funeral from the Amargosa Range. The Amargosa Range is directly continuous to the north with the Grapevine Mountains, and the latter are separated by an open cañon of the same name from Gold Mountain. Between Gold Mountain and Mount Magruder is an elevated depression which slopes to the east toward Stonewall Mountain and opens into the narrow strip of desert connecting Sarcobatus Flat with [Lida] and Clayton valleys. The long axis of Gold Mountain is east and west instead of north and south—in other words, it is at right angles to the range forming the eastern boundary of Death Valley and its northwest arm. On the Death Valley side this range is continuous and unbroken, for none of the valleys or cañons crossing it reach the low level of its bottom; but from the east side, which is very much higher, the case is different, for Grapevine Cañon and the valley between Gold Mountain and Mount Magruder cut down nearly to base level on that side.

Death Valley, whether regarded as an integral part or offshoot of the Mohave Desert, is the tract in which the most desolate aspects of a desert attain their most exaggerated development. Death Valley is a narrow chasm

about 135 miles in length and averaging eight or ten miles in width. It rises in three or four cañons on the south side of Mount Magruder in Nevada, and ends at the [Avawatz] Mountains in the Mohave Desert in California. It consists of two principal subdivisions: Death Valley proper, which is south of latitude 36°35'; and the northwest arm of Death Valley (also known as Mesquite Valley) which reaches thence in a northwesterly direction to Mount Magruder. The bottom of Death Valley proper is nearly 500 feet below the level of the sea. The valley is hemmed in on both sides by lofty precipitous mountains, the Panamint Range on the west and the Funeral Mountains and Amargosa Range on the east. The highest peak of the Panamint Mountains, Telescope Peak, attains an altitude of 12,000 feet while the mean level of the summit of the range is between 8,000 and 9,000 feet. The Funeral Mountains are about 6,000 feet in altitude, its higher peaks reaching 7,000 feet. The Funeral Mountains may be regarded as the type of a peculiar series of barren mountains occurring in various parts of the Mohave Desert region and the deserts of southern Nevada. These mountains consist of bare rock rising precipitously from the deserts at their feet and are utterly devoid of noticeable vegetation. They are largely volcanic and very dark in color, and are covered with irregularly disposed streaks and blotches of various shades of red and brown. From the crest of the Panamint Mountains to the Funeral Mountains is only twenty miles, and the width of the bottom of Death Valley between them in many places is less than six miles. The deepest part of the bottom is covered throughout its entire length with a somewhat remarkable salt and alkaline crust which cannot be crossed by a horse in more than one or two places. There are two distinct kinds of surface in this bottom: one pure white and almost level, resembling the alkaline and saline efflorescences of other deserts; and a peculiar kind of dark colored rock salt locally known as 'salt ground'. This 'salt ground' is about sixty miles long and varies from half a mile to several miles in width. In a general way it resembles frozen plowed ground greatly upheaved by frost and sprinkled with a light fall of snow which has melted irregularly from the more prominent projections. The soil here seems to consist of an alkaline clay thoroughly impregnated with salt and everywhere upheaved in odd-shaped masses and pinnacles from one to three, and even four feet in height, and is very hard, so hard indeed, that a sledge hammer is required to break it. Much of it is almost pure rock salt, hard and glassy. There are numerous water channels through it and these are white from the deposit of salt. The main channel in particular is full of brine with solid crystallized salt covering its sides and bottom, and with a coating on the surface which looks like thin ice, having even the greenish appearance of ice. Bordering the 'salt ground' in parts of the valley are borax beds consisting of borates of lime, potash, and soda. The borax beds or flats are not hard like the salt ground and are smooth on the surface. They are so soft that even in the drier parts one often sinks several inches when walking. On the borders of the borax beds are elevated tracts known as 'self-rising ground' a few feet above the general level of the surrounding surface and are treacherous and very difficult to cross. The salt bottom and salt ground are wholly devoid of vegetation, as are most parts of the borax flats, but a short distance away a fleshy saline plant [*Allenrolfea*], thrives and forms a distinct border around the salt ground. Behind this border the broad-leaved *Atriplex hymenelytra* [which always] indicates a saline and alkaline soil, makes its appearance; and still further back other species of *Atriplex* are common, along with many other desert plants. The ever-present Creosote Bush (*Larrea* [*tridentata*]) covers all of the gravel benches, and mesquite (*Prosopis pubescens* and *P. juliflora*) grow in solitary clumps on some of the sand dunes along the west side of the valley.

The characteristic birds, mammals, and reptiles already mentioned as inhabiting the Mohave Desert occur also in the higher parts of Death Valley.

The only running spring in, or emptying into Death Valley is Furnace Creek, a warm stream which rises from numerous hot springs in the Funeral Mountains and sinks on reaching the valley floor. There is a small artificial pond near the mouth of this creek on which a few water birds stop during migration and about which several desert species of bats are common, particularly *Nyctinomus* and [*Pipistrellus*] *hesperus*.

At the north end of Death Valley proper is a high gravel mesa which separates it from the northwestern arm, or Mesquite Valley. This mesa is one hundred to one hundred and fifty feet high and a mile to a mile-and-a-half

in width. It comes down from the Amargosa Mountains on the east and stretches somewhat obliquely across the neck between Death and Mesquite valleys (from northeast to southwest). There seems to be a narrow channel along the west side of this mesa through which the drainage of Mesquite Valley escapes south into Death Valley. The mountains on both sides are dark and barren as in Death Valley proper. Those on the east side show stratification in many places. The Funeral Mountains and Amargosa Range are the blackest, barrenest and most dismal of the desert ranges. The western half of Mesquite Valley consists of shifting sand dunes and ridges on which clumps of mesquite grow at intervals. Most of this sand undoubtedly came from Death Valley, blown by the south wind which is the prevailing wind there. Sand storms are the rule here and Mesquite Valley is really a worse place than Death Valley proper. While there are no running springs, there is salt water in places and water may be had by digging two or three feet in the area of sacaton grass along the east edge of the sand dunes. It is alkaline and slightly salty, but drinkable. Further north is a salt creek, but there is no extensive salt flat corresponding to that of Death Valley proper. The eastern part of Mesquite Valley along the foot of the Amargosa Mountains consists of gravel beds and areas of self-[rising] clayey soil mixed with gravel. The sand storms are of almost daily occurrence in Mesquite Valley and render traveling through that valley particularly dangerous. On the 13th of April, after crossing the sand dunes and ascending the steep gravel slope to the mouth of Emigrant Cañon we saw on looking back a sand storm raging all day long, with the air so full of whirls and clouds of sand that we could see nothing of the valley itself nor of the mountains beyond. While the general movement of the sand was from south to north, dense clouds and whirls were shifting about, constantly rising and sinking, the overflow sometimes passing out through gaps in the Amargosa Mountains and depositing their burdens on huge sand dunes in the Amargosa Desert. At the same time heavy storm clouds hung over the northern part of the valley, while the sky was clear in all other directions.

The warm ponds at the south end of Death Valley near Saratoga Springs are favorite resorts of several species of ducks during the winter season, and many Coots (*Fulica americana*) and [Tule] Wrens (*Cistothorus palustris* [*paludicola*]) remain to breed there. Now and then a solitary Raven follows the traveler, croaking expectantly.

Deep Spring Valley, California

Deep Spring Valley is a small basin in the White Mountains, by which it is completely surrounded. It lies on the east side of the main divide between Owens Valley, California and Fish Lake Valley, Nevada, with both of which it communicates by means of high passes. The altitude of the divide in the pass leading to Owens Valley is 2,350 meters (7,700 ft.), and that leading to Fish Lake Valley is 2,050 meters (6,750 ft.). The altitude of the bottom of the valley is 1,600 meters (5,300 ft.) or nearly as low as Fish Lake Valley. It measures about 16 kilometers in length by six kilometers in width (10 x 4 miles). The soil is chiefly sand. The valley is watered by three springs, and is an arid basin the water being insufficient for more than one, or at most, two ranches. There is a large alkaline lake at the west end near which is the ‘deep spring’ from which the valley takes its name.

The plants growing in the bottom are *Tetradymia spinosa*, *Grayia spinosa*, *Atriplex canescens*, *Menodora* [*spinescens*], *Lycium andersonii*, *Dalea polyadenia*, *D. fremontii*, *Artemisia* [*spinescens*], and *Eurotia lanata*. The commonest birds are *Amphispiza bilineata* and *Spizella breweri*. No chipmunks or spermophiles were seen, nor would they be expected since the true sagebrush (*Artemisia tridentata*) does not enter the valley at all.

Deep Spring Valley belongs to the upper division of the Lower Sonoran Zone.

Detrital Valley, Arizona

Detrital Valley is a barren desert on the east side of the Colorado River in western Arizona, and lies between the Black Mountains on the west and a more or less broken range or series of ranges on the east that cut

it off from the valleys along the foot of a great plateau escarpment. It is lowest at the north where it reaches the Colorado River opposite the mouth of the Virgin River, and rises thence southerly so gradually that the rise is almost imperceptible to the divide which is about opposite Mineral Park, whence the valley slopes to the south and is known as Sacramento Valley. The divide is high enough to be covered with Tree Yuccas. After Death and Panamint valleys, Detrital Valley is one of the most dangerous deserts to traverse, owing to the great distances between water and the excessive summer heat.

Fish Lake Valley, Nevada

Fish Lake Valley is on the boundary line between California and Nevada, but the larger part is on the Nevada side. On the west it is hemmed in by the lofty White Mountains, and on the east by the ~~Red Rock or~~ Silver Peak Range. It is completely separated from the northwest arm of Death Valley by Mount Magruder. Communication is established with Columbus Valley on the north by means of the narrow Bendire Cañon, and with Clayton Valley on the east by a gap in the [Silver Peak] Range. It contains a very deep and large spring or water hole known as Fish Lake; and for at least a part of each year a running stream (Cottonwood Creek) flows into its southern end from the White Mountains, serving to irrigate a ranch (Pipers Ranch) before losing itself in the desert bottom. Fish Lake Valley belongs to the upper division of the Lower Sonoran Zone, being too high for *Larrea*. Its bottom is covered with *Sarcobatus vermiculatus*, *Atriplex confertifolia*, *Eurotia lanata*, and *Artemisia spinescens*, and the gravel slope in the southeastern corner bears a zone of the new *Sarcobatus baileyi* mixed with *Grayia spinosa*. On the west side the true sage (*Artemisia tridentata*) follows the White Mountain slope down to 1675 meters (5500 ft.) thus reaching the valley proper on that side, and *Kunzia tridentata* comes down nearly as low. In the southwestern part of the valley we found for the only time on the Expedition the singular little cactus known as *Opuntia pulchella*, which has pink red flowers and an enormous root. The commonest birds were *Amphispiza bilineata* and *Spizella breweri*. A Say's Phoebe (*Sayornis saya*) was observed in the cañon leading up to Pigeon Spring. In this same cañon [*Citellus townsendii*] *mollis* comes down from Mount Magruder to the valley at an altitude of 1650 meters (5400 ft.), and the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) is common throughout the valley. A few scattering Tree Yuccas (*Yucca arborescens*) descend into the southeast corner of the valley to an altitude of about 1725 meters or 5700 feet and are responsible for the name 'Palmetto' by which a mining camp on the northwest slope of Mount Magruder has long been known.

Funeral, Amargosa, and Grapevine Mountains, California and Nevada

The Funeral, Amargosa, and Grapevine mountains form a continuous range about 120 miles in length on the east side of Death Valley and its northwest arm (Mesquite Valley). The name Funeral Range [Black Mountains] is applied to the southern part south of the cañon of Furnace Creek. The Amargosa Range extends from Furnace Creek northward to or a little beyond the middle of Mesquite Valley, north of which the range is called the Grapevine Mountains. The Funeral and Amargosa ranges, though attaining a considerable altitude, the highest peaks reaching 2,125 meters (7,000 ft.) are excessively barren and are devoid of junipers and Nut Pine, while the Grapevine Mountains are covered with a sparse growth of these trees. The Funeral Mountains may be taken as the type of the most barren and desolate of the desert ranges, whose precipitous rock slopes are practically devoid of vegetation and present the appearance of having been baked by the intense heat of the sun. While in the main they are black or very dark yet they present slopes and declivities of brilliant colors—mostly reds, yellows, and grays—sometimes arranged in the form of broad bands and in other cases as great blotches on the bare faces of the rock. This type of coloration has given rise to the name 'calico range' which is applied indiscriminately to a number of similar ranges in the hottest part of the desert region. To the same type belong parts of the Argus Mountains and the Panamint, Kingston, Belted, Desert, and [Las] Vegas ranges.

While the altitude of the Funeral Range is sufficient to place its higher parts in the Upper Sonoran Zone, it is nevertheless wholly Lower Sonoran. The explanation is that the range is so excessively arid and so constantly engulfed in superheated air rising from Death Valley at its west base and the Amargosa Desert on its east base that the temperature even on the highest summits is abnormally great.

Great Bend of the Colorado River, Nevada

The Great Bend of the Colorado River in southern Nevada is where the river turns abruptly south after its westerly course through northern Arizona and southern Utah. It is here broad and rapid, and for a few miles has not high banks on either side. Black Cañon [begins] about five or six miles below the bend and Boulder Cañon ending about the same distance above. There is very little river valley at this point, the mountains are near and the slopes rather steep. At the point where the bend turns there is a flat bottom perhaps an eighth of a mile in width on each side of the river, which tapers off in both directions into narrow sandy strips bearing clumps of mesquite and thickets of *Pluchea* [*sericea*], with a slender willow and considerable *Baccharis* in places. The so-called Colorado Mountains in western Arizona run parallel with the course of the river south of the bend and are only a few miles distant on the east or Arizona side. The Colorado Valley from Yuma to the Great Bend is very hot and many species of plants, birds, reptiles, and mammals occur here which are not found further west. Two species of pocket mice are common: one inhabits the sand hills close to the river, and the other the gravel benches rising directly from the sand. A white egret was seen here, along with Abert's [Towhee] (*Pipilo aberti*), [Long-tailed] Chats, Mocking Birds, Lazuli [Buntings], Road-runners and innumerable quail. The little Yellow-headed [Tit] (*Auriparus flaviceps*) was breeding abundantly in the grass of *Pluchia* at the time of our visit (May 4), its globular nests then containing fresh eggs. Lizards were very abundant and among them a medium-sized pale species not previously met with. The flower-eating [Desert Iguana] (*Dipsosaurus dorsalis*) is common but was not found to the north of this point, or to the westward except in Death Valley and the Amargosa Desert region.

[Big Desert] Kangaroo Rats (*Dipodomys deserti*) were exceedingly abundant and one hopped into our camp after dark. A smaller species (*Dipodomys merriami* [*merriami*]) is also common. A number of tortoise shells were found in some deserted Indian wigwams near the river.

Highland Mountains, Nevada

The Highland Mountains form the western boundary of Meadow Creek Valley in eastern Nevada and is east of Desert Valley and Pahroc Plain. The mountains are highest in the southern part of the range where they were covered with juniper, and the higher peaks are said to support a growth of Yellow Pine (*Pinus ponderosa*). Opposite Panaca the range is low, but it becomes higher again to the northward in the neighborhood of Pioche.

Kingston Range And Peak, California

The term Kingston Range is applied to a low range or double range of mountains along the eastern boundary of California which separates the Amargosa Desert from Pahrump Valley. The highest point is at the south end of the range and is known as Kingston Peak. This peak is nearly east of Saratoga Springs at the south end of Death Valley. Apparently, a southward continuation of the same range leads to Ivanpah Mountain.

Las Vegas Valley, Nevada

Las Vegas Valley lies between the Charleston Mountains on the west, and the [Las] Vegas and Desert ranges on the east, and its northern arm bends westward becoming continuous with Indian Spring Valley, which latter

continues without serious interruption to Ash Meadows and the Amargosa Desert. Several species of plants here find their western limit. Among the most conspicuous of these are the desert willow (*Chilopsis* [*linearis*]) and an acacia (*Acacia greggii*) both of which are common in washes near the east base of the Charleston Mountains. Along these same washes are a few small ash trees (*Fraxinus*). The common pink *Malvastrum* is more abundant in Las Vegas Valley than I have seen it elsewhere, covering thousands of acres so densely as to give color to the desert. The Creosote Bush and its ever present companion *Franseria dumosa* cover the valley below the altitude of 3700 feet. Two large and showy species of poppy, one white, the other yellow, grow in patches near the middle of the valley.

The [Crissal] Thrasher (*Harporhynchus crissalis*) here finds the western limit of its distribution.

At [Las] Vegas Ranch much fruit is raised among which may be mentioned peaches, apricots, almonds, figs, and sweet potatoes.

[Las] Vegas Wash leads from Las Vegas Valley to the [Great Bend] of the Colorado River and contains several pools of water and tule marshes. Its lower part is an open cañon with cliffs of bare rock on both sides.

Leach Point Valley, California

Leach Point Valley is a narrow east-and-west desert valley about 65 kilometers (40 miles) in length on the northern boundary of the Mohave Desert, between the Granite and Leach Point mountains on the south and a parallel range on the north—the latter extending from the south end of Death Valley to the south end of Panamint Valley. To the east a low pass connects Leach Point Valley and the southern end of Death Valley, on the west a low divide separates it from Borax Flat. Near the west end another gap leads north to [Lone] Willow Spring and Panamint Valley and a cañon in the Granite Mountains leads south to Pilot Knob. Leach Point Spring is a small spring of good water at the foot of a cañon in the Leach Point Mountains about opposite the middle of the valley on the south side and surrounded by hills of bare granitic rock much eroded and in places presenting a columnar appearance. The valley slopes gradually in both directions from a low divide a little west of the spring (altitude of divide about 900 meters or 3,000 feet). To the east a long slope leads down to a dry lake (altitude 600 meters or 2,000 feet) beyond which an almost inappreciable rise leads past some singular pools of poor water known as Owl Holes, and thence into the south end of Death Valley opposite Saratoga Springs.

Leach Point Valley is in the lower division of the Lower Sonoran Zone. Its bottom at the time of our visit (April 25 and 26, 1891) was covered with beautiful flowers of many kinds among which were two species of *Eschscholtzia*, two or three of *Oenothera*, and one or more each of *Abronia*, *Phacelia*, *Gilia*, *Malvastrum*, *Delphinium*, *Salva* [sic], and several handsome composites, besides the usual desert shrubs. The tracks of a Desert Tortoise (*Gopherus agassizii*) were seen in the sand and were followed and the animal captured.

At the spring several pairs of [Valley] Quail (*Callipepla californica vallicola*) were found and a cock was shot. Doves (*Zenaidura macroura*) came to drink in large numbers in the evening and 15 were secured for food. They had recently arrived from the south. Several Say's Phoebes (*Sayornis saya*) had their nests in caves and crevices among the rocks. Rock Wrens (*Salpinctes obsoletus*) were common. A pair of Mocking Birds (*Mimus polyglottos*) had selected quarters near the spring, where the single willow tree was visited by numbers of [House] Finches (*Carpodacus mexicanus frontalis*) and several Costa's Hummingbirds ([*Calypte*] *costae*). Other birds seen were the White-throated Swift ([*Aeronautes*] *melanoleucus*), a pair of Ravens (*Corvus corax sinuatus*), Brewer's Blackbird (*Scolecophagus cyanocephalus*), Black-throated Sparrow (*Amphispiza bilineata*), Sage Sparrow (*Amphispiza belli nevadensis*), Brewer's sparrow (*Spizella breweri*), and Intermediate Sparrow (*Zonotrichia* [*leucophrys*] *intermedia*)—the three last being migrants not yet located for the summer. A [Western Horned]

Owl (*Bubo virginianus subarcticus*) was heard at night, and a [Western] Red-tail Hawk (*Buteo borealis calurus*) and Turkey Vulture (*Cathartes aura*) were seen.

Tracks of the Desert Wildcat (*Lynx rufus* [*eremicus*]) were observed, and two species of white-footed mice ([*Peromyscus*] *eremicus* and [*P. maniculatus*] *sonoriensis*) were caught near the spring.

Meadow Creek Valley, Nevada

Meadow Creek Valley is a narrow north and south valley in eastern Nevada (about 18 kilometers or 11 miles in length) between the Juniper Mountains on the east and Highland Mountains on the west, and separated from the Muddy River Valley (to which it is tributary) by a rocky cañon said to be about 50 kilometers (31 miles) in length. The Mormon town of Panaca and a crushing mill are situated near the middle of the valley on the east side of the creek at an altitude of about 1,650 meters (5,400 ft.); and the once famous mining camp of Pioche is at the extreme north end of one of the terminal cañons. Meadow Creek contains enough water to irrigate a narrow strip on which grass and weeds grow luxuriantly.

The valley is covered with sagebrush mixed with *Grayia spinosa* and *Eurotia lanata* and the latter sometimes covers acres almost to the exclusion of other plants. *Artemisia spinescens* and *Tetradymia glabrata* are common in places, and the narrow alkali flat bordering the creek is grown over with *Atriplex confertifolia* and *Sarcobatus vermiculatus*. *Tetradymia glabrata* was not seen anywhere east of Meadow Creek Valley, where it was first noted about eight miles east of Panaca. It ranges thence westward at suitable elevations to Owens Valley in eastern California. Juniper covers the ranges on both sides and descends to within about 125 meters (400 ft.) of the level of the bottom on the east (Juniper Mountains) side, and 50 meters (200 ft.) on the west (Highland Mountains) side.

Mohave Desert, California

The Mohave Desert is an extensive area in the eastern part of southern California, north and northwest of the Colorado Desert. Its western arm is sharply defined by the horseshoe-shaped series of ranges comprising the San Bernardino, San Gabriel, Sierra Liebre, Tejon, and Tehachapi mountains, which together form the southern continuation of the great Sierra Nevada system. Its eastern or main part has no very definite boundaries, though the so-called Chuckwalla Range, a more or less direct continuation of the San Bernardino Mountains, is permitted by common consent to form the boundary between the Mohave and Colorado deserts. On the north, an irregular east and west range made up of the Granite Mountains and Leach [Point] Mountains and beginning at Pilot Knob or Granite Mountain extend easterly as far as the south end of Death Valley and are sometimes regarded as the northern boundary of the desert. Many, however, regard Panamint and Death valleys and the Amargosa Desert as falling properly within the limits of the Mohave Desert, of which they are at most but northern offshoots. It is probable if not certain that the Mohave River which now disappears in the sand at the point known as the 'Sink of the Mohave' or Soda Lake once found its way northward into Death Valley.

The Mohave Desert, like the Great Basin, has no drainage to the sea. Its rainfall is scant and either finds its way into the river of the same name or evaporates from the bottoms of numerous little basins or desert valleys, for the Mohave Desert is by no means a plain but is broken into a number of minor deserts or basins by irregular ranges of barren, rocky mountains that rise abruptly and often precipitously from the sands or gravels below. They were called 'lost ranges' by Fremont, and differ in [no way] from the typical desert ranges of the southern part of the Great Basin. Each of the numerous minor valleys circumscribed by these ranges and their projecting spurs contains one or more alkaline flats devoid of vegetation, and commonly known as playas or 'dry lakes' because they are temporarily covered with water whenever rains occur, as they do at certain periods of the year.

Some authors regard the Colorado Desert as a part of the Mohave Desert.

The Mohave River rises in the San Bernardino Mountains and, though a stream of considerable size in the spring and flowing with great velocity, is soon swallowed up by the hot sand through which it passes. The prevailing wind blowing in the same direction as that in which the stream flows pile up great billows of sand across its course in which the river sinks and comes to the surface several times before finally disappearing.

It is a common belief that the desert ranges of the Mohave Desert conform in trend to those of the Great Basin in general, the axes of which are nearly north and south, but this is not the case. The prevailing direction of the Mohave Desert ranges is east and west, though many of them are more or less irregular and send out spurs in several directions. The northern boundary of the Mohave Desert is defined by two nearly parallel east and west ranges whose axes are at right-angles to those of the ranges immediately to the north, namely the Slate, Argus, Panamint, and Funeral mountains; and in looking northward from the San Bernardino Mountains, the prevailing trend of the southern ranges is clearly seen to be east and west. The Chuckwalla Range forming the southern boundary of the Mohave Desert trends from the northwest to the southeast. Water is very scarce though springs are known to exist in a few places, particularly in the west. Along the southern edge of the Mohave Desert west of San Bernardino Mountain water may be obtained by boring, particularly in Antelope Valley. The area where water can be thus obtained is a narrow strip along the north base of the San Bernardino, San Gabriel, Sierra Madre, and Sierra Liebre mountains. It is usually found at a depth of about 100 feet, and its presence has led a number of settlers to take up homesteads there, the soil and climate being adapted to the successful production of the raisin grape and other fruits of the Lower Sonoran Zone that have made southern California famous. Most of the area susceptible of cultivation is in or just below the Tree Yucca belt.

The western arm of the Mohave Desert, i.e., Antelope Valley, gradually rises to the westward where it is contracted into a narrow tongue between the Sierra Liebre on the south and the Tejon Mountains on the north. A few miles of low hill separate the extremity of this tongue from the upper end of the Cañada de las Uvas, by means of which an easy wagon road communicates with the Bakersfield Plain in the upper part of the San Joaquin Valley. The Cañada de las Uvas bifurcates and a shallow lake, Castac Lake, is situated at the forks surrounded by oaks and in part by grassy fields. The ruins of old Fort Tejon are hidden in a grove of huge oaks, several of which are of exceptional size, on the west side of the main cañon about two miles below Castac Lake. Old Fort Tejon is of considerable historic interest not only because it was one of the important military outposts in the early days of California, but also because it was visited by several of the early Government transcontinental expeditions, and was the type locality at which a number of new species were first collected. The [Allen] Pocket Mouse (*Perognathus* [*californicus dispar*]), Cassin's Vireo (*Vireo solitarius cassinii*), and a number of plants were first collected here.

Two other passes connect the Mohave Desert with the upper San Joaquin Valley, both traversing the north arm of the horseshoe ranges, namely, Tejon Pass, which is not passable for wagons; and Tehachapi Pass, well-known as the route by which the Southern Pacific Railroad crosses the mountains. The southern arm of the horseshoe is traversed by the San Francisquito, Soledad, and Cajon passes, the two latter being railroad passes. Elizabeth Lake is situated in the upper end of the San Francisquito Pass near the Mohave Desert. A single wagon pass leads from the northwestern part of the Mohave Desert across the southern part of the Sierra Nevada mountains into the valley of the Kern River. This is the famous Walker Pass. While this pass does not lead directly down into the San Joaquin Valley (because the cañon of the lower Kern River cannot be followed), a good wagon road connects the two by a roundabout course, passing northward from the forks of Kern River to Walker Basin and thence northeasterly over a high divide from which it descends to the bottom of Tehachapi Pass at Caliente.

The characteristic forms of animal and vegetable life of the Mohave Desert are the prevailing forms over an extensive area in southeastern California and southern Nevada. The largest and most noteworthy type of

vegetation is the Tree Yucca (*Yucca* [*arborescens*]), which gives a peculiar physiognomy to the region in which it occurs. This remarkable tree attains a height of 25 or even 30 feet, and is social in habit, growing in often rather sparse forests devoid of obscuring growth. Such forests form an almost continuous belt around the western arm of the Mohave Desert, covering the slopes at the base of the San Bernardino, San Gabriel, Sierra Madre, Sierra Liebre, Tejon, and Tehachapi mountains, as well as the southern part of the Sierra proper in the neighborhood of Walker Pass, and thence westerly. They occur also on the basal slopes of many of the barren desert ranges in the interior of the desert, and extend northward in Nevada in suitable situations as far as the Pahranagat, Timpahute, and Pahroc mountains in the east; and in the west as far as the northern slope of Mount Magruder.

Perhaps the most continuous characteristic and universally distributed plant of the Mohave Desert is the Creosote Bush (*Larrea* [*tridentata*]), an evergreen bush averaging a meter or a meter-and-a-half in height, and possessing a resinous exudation having a very strong odor which pervades the atmosphere wherever it is at all abundant. While the Creosote Bush is not confined to the Mohave Desert since it extends in a southeasterly direction across the Colorado Desert, southern Arizona, and parts of northern Mexico, it attains its center of development in the Mohave Desert and may be regarded as its most characteristic plant. It covers the gravelly parts of the desert everywhere from the lowest altitudes up to four thousand feet, and in favorable southerly and southwesterly slope exposures to four thousand five hundred or even five thousand feet. While it thrives best on gravel soil, it spreads over many of the sandy stretches, but does not grow on alkaline [soil]. It flowers profusely in March, April, and May, bearing yellow flowers about the size of a buttercup. In June the petals fall off and the flowers give way to small seed-capsules covered with a short whitish wool. Other shrubs which may be regarded as fairly characteristic of the Mohave Desert, are several species of *Atriplex*, *Lycium*, *Thamnosma*, *Salazaria*, *Krameria*, *Coleogyne*, and *Franseria dumosa*, the latter species occurring with the *Larrea* wherever found.

The most characteristic birds of the Mohave Desert are the [Black-throated] Sparrow (*Amphispiz*a *bilineata*), LeConte's Thrasher (*Harporhynchus lecontei*), and the Cactus Wren ([*Heleodytes*] *brunneicapillus*) which weaves its large gourd-shaped nest among the branches of the Tree Yuccas, as well as in the branching cactuses called 'chollas' by the Mexicans.

The commonest mammals seen in the day-time are the [Colorado Desert] Jack Rabbit (*Lepus* [*californicus deserticola*]) which is exceedingly abundant; the [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) which is frequently seen running over the sand hills and amongst the desert brush with its tail cocked over its back so as to display to best advantage its white under surface; and the [Desert] Coyote (*Canis latran*s [*estor*]) which is often noticed skulking about in the bushes. There are many other mammals which appear at night-fall and are very abundant. Among the most noteworthy of these are three species of kangaroo rats (*Dipodomys deserti*, *D. merriami* [*merriami*], and [*D. mohavensis*]) which form the chief food of the big-eared [Mohave Desert] Kit Fox (*Vulpes macrotis* [*arsipus*]), pocket mice (*Perognathus* and *Chaetodipus*), grasshopper and scorpion mice (*Onychomys* sp.), and the woodrats (*Neotoma* sp.) which protect their nests by covering them with large heaps of cactus spines and the sharp-pointed leaves of yuccas. Two species of spermophiles ([*Citellus*] *mohavensis* and *C. tereticaudus tereticaudus*) occur in certain localities, and the former species is not known from any other part of the world.

Of reptiles, the most noteworthy are the Horned Rattlesnake locally known as the 'Side winder' (*Crotalus cerastes*), the Chuckwalla (*Sauromalus ater*), and several other lizards, one of which, the beautiful and agile *Callisaurus ventralis*, carries its tail curled over its back as if afraid of burning it on the hot sands over which it runs with great swiftness, and a large scaly lizard (*Sceloporus* [*magister*]) that lives in the Tree Yuccas and feeds exclusively on insects. Another singular lizard is the large brown *Dipsosaurus dorsalis* which in appearance resembles the ancient saurians and feeds exclusively on flowers (the stomachs of many examined containing bouquets of yellow, red, and purple blossoms). Among the commonest lizards is the yellowish Leopard Lizard

(*Crotaphytus wislizenii*) which is also a flower eater, although it sometimes feeds on insects also. This animal is remarkable from the circumstance that the female becomes blotched with red, and her tail turns salmon-color after her eggs are fertilized. Perhaps one of the most singular reptiles of the Mohave Desert and its tributary valleys, at least an animal that seems out of place in such surroundings, is a land tortoise ([*Gopherus*] *agassizii*) which is much sought after by the Indians and the coyotes. Horned toads (*Phrynosoma* sp.) are common as they are in other arid parts of the United States.

Scorpions are common and were frequently found in the morning under the blankets of the various members of the party.

The general altitude of the Mohave Desert is about three thousand feet, though the lowest portions are little more than two thousand; and the sink of the Mohave or Soda Lake is 900 feet.

Mount Magruder, Nevada

The lofty mountain ranges that form the east and west walls of Death and Mesquite valleys unite at the north in Mount Magruder, which is the culminating point of the highlands in that neighborhood.

Mount Magruder is in southwestern Nevada, only a few miles from the boundary line of California, at latitude 37˚ 20'. It stands at the head of the northwest arm of Death Valley, which it overlooks for its entire length. The terminal cañons of Death Valley, four or five in number, of which Tule Cañon is the most easterly, cut into its south face. It is a large mountain with an extensive horseshoe-shaped plateau on top, and bears a number of secondary mountains or high hills on its rim, the highest of which is supposed to be about 10,000 feet in altitude. Mount Magruder is continuous on the west with the northern end of the Panamint Range, which latter rises sharply from the west side of Death Valley, while on the south it is separated by a narrow depression from Gold Mountain, the northernmost mountain mass of the range forming the eastern boundary of the northwest arm of Death Valley (Mesquite Valley). On the northwest Mount Magruder slopes down to Fish Lake Valley, on the northeast to Clayton and [Lida] valleys; and on the east to the strip of desert connecting the latter with Sarcobatus Flat. There are two principal peaks of nearly equal height, both on the east side of the plateau and one a little north of the other. The northernmost (which is slightly the higher) is between Fish Lake and [Lida] valleys and seems to be continuous on the north with the Silver Peak ~~or Red~~ Range; it is here named Mount Gabb in honor of William Gabb of the old California Geological Survey, who visited it in the 1860s or 1870s and obtained the type of [*Microtus*] *curtatus*. To the south the narrow and elevated valley that separates Mount Magruder from Gold Mountain slopes to the east and opens into the north-south valley connecting Sarcobatus Flat with [Lida] Valley. On the west, Mount Magruder is separated from the White Mountains by a gap or pass which connects Fish Lake and Saline valleys. [Lida] Valley is a small cul de sac ~~often at the east end only~~, lying between the eastern spur of Mount Magruder and Mount Gabb. It contains a spring and a ranch.

The view from the summit of Mount Magruder is unusually comprehensive and is unobstructed in any direction except to the west where it is cut off by the snow-covered crest of the White Mountains and High Sierra. To the north, Arc Dome and San Antonio Peak, nearly a hundred miles away, are distinctly seen; to the south, Telescope Peak 100 miles distant; to the east, the Ralston Desert and the ranges beyond as far as the eye can reach; and to the southeast, Charleston Peak nearly 150 miles away. Gold Mountain and the Grapevine Mountains on the east side of the northwest arm of Death Valley and the calico peaks and Tin Mountain on the west are near at hand. The following mountains were capped with snow on June 6, 1891: Arc Dome, San Antonio Peak, Montezuma Mountain, Charleston Peak, Red Mountain, parts of Gold Mountain and Grapevine Mountain, Telescope Peak, the whole of the White Mountains, and the whole of the High Sierra both north and south of Mount Whitney.

From the bio-geographic standpoint, great interest attaches to Mount Magruder because its plateau is a genuine sage plain covered with the true sagebrush (*Artemisia tridentata*) and contains the characteristic species of birds, mammals, reptiles, and plants that inhabit the true sage plains of northern Nevada and Idaho. The well-known birds of the sage plains breed here, namely, the Sage Thrasher (*Oroscoptes montanus*), Brewer's Sparrow (*Spizella breweri*), Sage Sparrow (*Amphispiza belli nevadensis*), [Western] Lark [Sparrow] (*Chondestes grammacus strigatus*), [Desert] Horned Lark (*Otocoris* [*alpestris*] *arenicola*), and Sage [Grouse] (*Centrocercus urophasianus*). Also the characteristic mammals of this zone include the [Great Basin] Chipmunk ([*Eutamias*] *minimus pictus*), [Piute Ground Squirrel] ([*Citellus townsendii*] *mollis*), [Mount Magruder] Pocket Mouse (*Perognathus* [*parvus magruderensis*]), and [Short-tailed Vole] ([*Microtus*] *curtatus*). Even the distinctive lizard of the sage plains, *Sceloporus graciosus*, is abundant. Some of the hills which rise from the summit of the plateau are covered with dense groves of Nut Pine (*Pinus monophylla*), the nuts of which are gathered by the Indians in large quantities and stored for winter use.

In the Nut Pine belt on Mount Magruder the Piñon Jay (*Cyanocephalus cyanocephalus*), Scott's Oriole (*Icterus parisorum*), [Lead-colored Bush]-tit (*Psaltriparus plumbeus*), Black-throated [Gray] Warbler (*Dendroica nigrescens*), Mountain Bluebird (*Sialia arctica*), [Western] Gnatcatcher (*Polioptila caerulea obscura*), Mountain Chickadee (*Parus gambeli*), [Ash-throated] Flycatcher (*Myiarchus cinerascens*), Western Chipping Sparrow (*Spizella socialis arizonae*), and Green-tailed Towhee (*Pipilo chlorurus*) are common. A pair of [Ferruginous Rough-leg] Hawks (*Archibuteo ferrugineus*) were seen at the summit of the mountain and afterwards in the Nut Pines. Mocking Birds were common in Tule Cañon, and Lazuli [Buntings] (*Passerina amoena*) and Spurred Towhees (*Pipilo* [*maculatus*] *megalonyx*) in the chaparral of the lower slopes. The [Short-tailed Vole] ([*Microtus*] *curtatus*) is common in the higher parts of the sagebrush plateau and gets up into the juniper, probably ranging nearly to the summit of mountain, its favorite haunts being the clumps of *Peraphyllum*, *Kunzia,* as well as sagebrush. The type locality recorded for this species is Pigeon Spring on the north slope of Mount Magruder, and the specimen doubtless came from the mountain side above.

A large form of the [Mount Magruder] Pocket Mouse (*Perognathus* [*parvus magruderensis*]) is common on the gravel tops of the higher hills which rise from the plateau.

In ascending Mount Magruder from Death Valley one passes from the typical Lower into the Upper Sonoran Zones, and then into the Neutral or Transition Zone, which occupies the great plateau and whole of the upper part of the mountain except the highest peaks, which latter have a tinge of the Boreal [Zone]. Descending the north side of Mount Magruder to Fish Lake Valley, the Upper Sonoran Zone is entered in the neighborhood of Pigeon Spring, where Say's Phoebe (*Sayornis saya*), [Black-throated] Sparrow (*Amphispiza bilineata*), and [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) occur and range thence across Fish Lake Valley, together with the greasewoods *Sarcobatus vermiculatus* and *Atriplex confertifolia*, [which are] characteristic plants of the Upper Sonoran Zone.

During the past season a heavy snowfall occurred on Mount Magruder the last week in May, and on the highest peak the winter snow remained as late as the middle of June.

Oasis Valley, Nevada

Oasis Valley is a small and narrow valley about 13 kilometers (eight miles) in length on the southwestern edge of the Ralston Desert and just north of the northeast corner of the Amargosa Desert, with which the latter communicates by means of a short cañon traversed by the Amargosa River. This river, though disappearing promptly on reaching the desert end of the cañon, is a running stream throughout the entire length of the valley, and with additions from the springs that percolate into it furnishes enough water to cause a luxurious growth of

salt grass and other equally useless plants to spring up in the bottom, giving it a pleasing green color from which the valley takes its name. The Amargosa River forks at the head of Oasis Valley: the west branch rises in a spring a short distance higher up, the east branch is larger and comes in from the Ralston Desert through a short cañon. Oasis Valley is completely surrounded by low hills, the highest of which are on the north and east.

Oasis Valley is on the boundary between the upper and lower divisions of the Lower Sonoran Zone, a narrow strip along the bottom being within the *Larrea* belt and the remainder in the *Grayia* belt.

Owens Valley, California

Owens Valley lies directly at the east foot of the High Sierra and is bounded on the east by the lofty White and Inyo mountains. It is a long and narrow valley extending from the point where the White Mountains fork out from the High Sierra on the north, to the Mohave Desert on the south. It is well watered, a large stream or river traversing its entire length as far as Owens Lake, and numerous beautiful mountain streams coming in from the High Sierra on the west. On the opposite [east] side, it receives little water from the White Mountains and none at all from the Inyos. Owing to this abundant water supply there are several towns and many ranches in the valley. The water of the lake is poison, being excessively alkaline and saline. It is a favorite winter resort for ducks, which cover its surface in immense flocks. The [Eared] Grebe (*Colymbus nigricollis californicus*) comes in large numbers and remains into the summer. Hundreds of them die and are washed ashore, but whether they starve or die from drinking the poison water is not certain. This habit of dying here in multitudes has been going on for many years, as Captain Bendire tells me he noticed dead grebes about the lake in great numbers 25 years ago. The Avocet (*Recurvirostra americana*) is common about the lake.

The northern half of the valley belongs to the Upper Sonoran Zone; the lower, beginning about twenty miles north of Owens Lake, to the Lower Sonoran. Sagebrush is common throughout the northern part and extends southward along the base of the Sierra as far as Owens Lake. The Creosote Bush (*Larrea* [*tridentata*]) occurs on the bench south of the middle of the lake on the west side, and on the east side grows sparingly at the base of the Inyo Mountains for some miles north of the lake, together with its ever-present companion (*Franseria dumosa*). Among the commonest plants near the lake are *Lycium cooperi*, *Dalea fremontii*, *Hymenoclea salsola*, *Atriplex confertifolia*, and *A. polycarpa*, while *A. parryi*, *A. torreyi*, *Sarcobatus vermiculatus*, *Lycium andersonii*, and *Tetradymia comosa* occur more or less sparingly. Small groves of ash (two species, *Fraxinus*), and also many willows and cottonwoods thrive along some of the fine streams that enter Owens Lake from the west. About ten miles south of the lake, the valley is narrow and nearly level, sloping slightly to the southward, with a mixed flora: some sagebrush (*Artemisia tridentata*) grows on the cool slopes, with the Creosote Bush (*Larrea* [*tridentata*]) on the warm slopes, and a great deal of *Atriplex confertifolia*, *A. canescens*, *A. polycarpa*, and *Sarcobatus vermiculatus* in the alkali flats, together with a little *Atriplex torreyi*, *Hymenoclea salsola*, *Dalea polyadenia*, and [*Acamptopappus*] s*phaerocephalus*. This valley leads into [Haiwee] Meadows, a grassy flat with some springy land in the bottom. Immediately below [Haiwee] Meadows the valley narrows into a cañon four miles long, and then expands into a broad basin perhaps ten miles in length with a crater butte standing near its south end and great lava flows coming down into the valley from the Coso Mountains on the east. South of the crater butte the valley narrows into a cañon containing near its north end Little Owens Lake, locally known as 'Little Lake'. The broad plain between Little Owens Lake and [Haiwee] Meadows is a true *Larrea* plain. A great lava dike averaging at least 150 feet in height begins about a mile north of Little Lake, and forms a wall along the east side of the lake and continues in a southerly direction for about 10 miles. Little Lake is the result of the lava flow that dammed the valley at the point where its lower end now is. South of that lake the valley descends rapidly for about a mile and then continues with a gradual descent to Salt Wells Valley and the Mohave Desert. At Little Owens Lake, which is only about a mile in length, the [Fulvous] Tree Duck (*Dendocygna fulva*) is tolerably common and is not known from any other locality in the region. The water of this lake is only moderately saline. Flocks of the rare Black

Swift (*Cypseloides niger*) were frequently seen in the neighborhood of Owens Lake and the Inyo Mountains, where they doubtless breed. LeConte's Thrasher (*Harporhynchus lecontei*) is common from Owens Lake southward, as are the Texas Nighthawk (*Chordeiles texensis*) and [Black-throated] Sparrow (*Amphispiza bilineata*). In the Upper Sonoran Zone, which occupies the northern half of the valley, the following birds were common: Lazuli [Bunting] (*Passerina amoena*), Brewer's Sparrow (*Spizella breweri*), Sage Sparrow (*Amphispiza belli nevadensis*), [Western Lark Sparrow] (*Condestes grammacus strigatus*), Spurred Towhee (*Pipilo chlorurus*) [sic], and [Western] Blue Grosbeak (*Guiraca caerulea eurhyncha*). The [Valley] Quail (*Callipepla californica vallicola*) is common in most parts of the valley. Among mammals, the large and small kangaroo rats (*Dipodomys deserti* and *D. merriami* [*merriami*]) occur in the Lower Sonoran Zone, while they are replaced in the Upper Sonoran by [*Dipodomys microp*s]. The [Canyon] Bat ([*Pipistrellus*] *hesperus*) is common. The [White-tailed] Antelope Squirrel ([*Citellus*] *leucurus* [*leucurus*]) is abundant throughout the valley except in the northern part, as is the Whip-tail Lizard. The Road-runner (*Geococcyx californianus*) inhabits the southern part of the valley, ranging north as far as the town of Lone Pine. In ascending the base of the Sierra opposite Lone Pine the following plants are common up to an altitude of 5,100 feet: *Tetradymia comosa*, *T. glabrata*, *Grayia* [*spinosa*], *Lycium andersonii*, *Hymenoclea salsola*, *Eurotia lanata*, and *Peucephyllum schottii*. The western birch (*Betula occidentalis*) grows abundantly along the streams at the foot of the mountains. The *Coleogyne* zone is well marked, extending from about 4,500 feet up to 6,200 feet. The following species range up to 6,000 to 6,200 feet: *Tetradymia spinosa*, *Coleogyne ramosissima*, *Lycium cooperi*, *Eriogonum fasciculatum*, and [*Opuntia*] *echinocarpa*.

Pahroc Plain, Nevada

Pahroc Plain is an unusually flat plain between the Highland Mountains and Hyko Range south and southwest of Pahroc Spring. Desert Valley (between the northern part of the Highland Mountains and the Pahroc Mountains) may be regarded as a northeast extension or arm. Pahroc Plain slopes to the south and west and is in the upper or *Grayia* belt of the Lower Sonoran Zone. Indeed it is peculiar for the quantity and purity of the *Grayia* that grows on its bottom, large areas being covered so exclusively with this brush that it might well be called a *Grayia* plain. *Tetradymia glabrata* also is common in places, as are *Eurotia lanata*, *Lycium andersonii*, and *Atriplex canescens*.

An unusually short and broad form of the Gridiron-tail Lizard (*Callisaurus ventralis*), which may be an undescribed subspecies, inhabits Pahroc Plain and Desert Valley.

The commonest birds are the Black-throated Sparrow (*Amphispiza bilineata*) and [Desert] Horned Lark (*Otocoris* [*alpestris*] *arenicola*).

Pahrump Valley, Nevada

To the east of Ash Meadows is a low range of mountains which may be regarded as a northern continuation of the Kingston Range. East of this range is Pahrump Valley, completely hemmed in by mountains except on the south, being bounded on the north and east by the lofty Charleston or Yellow Pine mountains. The higher part of the Charleston Mountains was covered with snow as late as the end of June and must have lasted until July. The low range between Pahrump Valley and Ash Meadows is interesting from the circumstance that two conspicuous plants, viz. *Yucca baccata* and *Opuntia* [*ramosissima*] find their western limit here. There is comparatively little *Larrea* in Pahrump Valley but *Lycium* is abundant on the gravel slopes, and *Atriplex confertifolia* and *canescens* [occur] on the alkaline banks, which are very extensive. There are two large springs in the valley at each of which is a ranch. At these ranches alfalfa, grapes, peaches, plums, apricots, almonds, figs, and bellflower apples are grown. Yellow-headed, red-[winged], and Brewer's blackbirds were seen about the springs the last of April. Horned Rattlesnakes were very abundant in Pahrump Valley, as are the several Sonoran species of lizards. The bottom of the valley is a little below three thousand feet in altitude.

The east slope leading up to the Charleston Mountains is well adapted for the study of the order of succession of many species of zone plants which grow in southern Nevada. The nearly level gravel slope is covered with *Larrea* mixed with *Atriplex polycarpa*, *A. canescens*, *Franseria dumosa*, and *Lycium*. About three hundred feet above the bottom of the valley (altitude 3,200 feet) *Yucca baccata* begins and is abundant between ~~the levels~~ 3,300 and 3,800 feet where it forms a well-marked zone and above which it disappears altogether. Mixed with it are scattering trees of *Yucca* [*arborescens*] which become more and more abundant in ascending until it forms a true forest in the upper part of the *Larrea* and *Coleogyne* belt reaching and mixing with junipers (*Juniperus californica*) at 5,000 feet and pushing up two or three hundred feet higher. The individual yucca trees here average smaller than those of the Mohave Desert, rarely exceeding twelve or fifteen feet in height. *Yucca baccata* averages from four to eight feet in height, only occasionally attaining ten feet, and never branching like *Y.* [*arborescens*]. In the yuccas, Mocking Birds, Le Conte's Thrashers, and [Arkansas Kingbirds] are common. In the desert below the yuccas, the ~~desert~~ sparrows *Amphispiza bilineata* and *Spizella breweri* were found. A very gradual and even slope leads up to the divide at Mountain Springs, the lowest point of summit of the range between Pahrump Valley on the west and [Las] Vegas Valley on the east. Omitting the upper two miles of this slope the lower portion faces the west and the rise for ten miles averages two hundred feet to the mile presenting (as before stated) an unusually favorable slope for studying the succession of the plant zones.

At Yount's Ranch, the following crops and fruits are raised successfully: alfalfa, grapes (for dried raisins), peaches, plums, apricots, almonds, figs, and bellflower apples.

Panamint Range, California

The name Panamint Range is applied to the whole of the lofty mountain range or ranges on the west side of Death Valley and its northwest arm, stretching from Mount Magruder southward to Windy Gap or Long Valley. The highest point in the range is Telescope Peak, which is opposite the middle of Death Valley proper and attains an altitude of nearly 3,650 meters (12,000 ft.). There is no break in the range anywhere west of Death Valley proper, the first gap being Emigrant Cañon, which opens into a broad basin at the foot of the northwest arm of Death Valley (commonly known as Mesquite Valley). The range here bears strongly to the west and then turns north again. The northern part is interrupted by several open cañons separating the peaks known respectively (from the north southward) as Shaws Peak, and then first, second, and third calico peaks.

The greater part of the Panamint Range taken as a whole is a true barren desert range, but the highest part in the neighborhood of Telescope Peak attains so great an altitude that it is clothed with junipers and Nut Pine, and the summit of Telescope Peak carries a sparse growth of *Pinus flexilis*. The deserted mining camp of Panamint is situated near the summit of the range south of Telescope Peak at the head of Surprise Cañon, where good water exists. Water may be had also on the northwest slope of Telescope Peak in a cañon about 10 miles above Wildrose Spring, and at Wildrose Spring, and still further north in Emigrant and Cottonwood cañons. The summit of Telescope Peak was covered with snow as late as the latter part of June in 1891. True sagebrush (*Artemisia tridentata*) is common a little below the juniper belt along the summit of the range. The [Plumed] Quail (*Oreortyx pictus plumiferus*) reaches its extreme eastern limit in the juniper belt on the summit of the Panamint Range and on Mount Magruder, Nevada. Telescope Peak is the type locality of a new species of chipmunk ([*Eutamias*] *panamintinus*) which is common among the junipers and Nut Pines, and is characterized by the golden color of its tail. The remarkable black lizard, known to the Indians as the 'Chuckwalla' (*Sauromalus ater*) is common in some of the cañons of the Panamint Range and is eaten by the Panamint Indians, the sole living representatives of which inhabit the cañons of these mountains (Cottonwood Cañon and Johnson Cañon). In April, 1891, the chief of this tribe (Panamint Tom) was camped with his family and one or two others at the mouth of Hall Cañon near Hot Springs on the east side of Panamint Valley.

Panamint Valley, California

Panamint Valley is a long and narrow desert between the lofty Panamint Mountains on the east and the Argus Mountains on the west. Next to Death Valley, from which it is separated by the Panamint Mountains, it is the deepest and also the most desolate and dangerous of the barren deserts of southern California. It resembles Death Valley further in the extent of its salt and alkali flats (in the southern part) with one of more lakes of brine, the largest of which measured about two miles in length at the time of our visit (April 24, 1891). On the east side near the mouth of Surprise Cañon (just south of Telescope Peak) are some hot springs and marshes where drinkable though poor water may be had. At the extreme south end, near the foot of the Slate Range, is a small spring of good water known as Lone Willow Spring.

Panamint Valley is separated from Saline Valley on the north by a low east and west range named by us as the 'Nelson Range' in honor of Mr. E.W. Nelson who explored it and made extensive collections there.

The usual desert shrubs cover the high gravel slopes of the valley, and mesquite occurs in places along the bottom, particularly in the neighborhood of Hot Springs.

At the present time Panamint Valley cannot be reached by wagon or buckboard from Owens Valley, though formerly a road passed through Shepherd Cañon. From the south Panamint Valley is easily reached from Pilot Knob and Leach Point Valley, and an open cañon or wash known as Windy Gap leads easterly from near its south end to the southern part of Death Valley. When camped at Hot Springs the latter part of April a remnant of the Panamint tribe of Indians (Shoshones) was found living in the mouth of Hall Cañon at the foot of Telescope Peak. The boys are excellent shots with bow and arrow and kill many small birds for food. The men and women trap kangaroo and wood rats, and hunt large lizards called 'Chuckwallas' (*Sauromalus ater*) for food.

Santa Clara Valley, Utah

The Santa Clara Valley is remarkable for its scenery and is of interest to a wide range of specialists; to the topographer, because of the remarkable manner in which it is surrounded by picturesque mountains, deep cañons and lofty precipices; to the geologist, because of its proximity to the Grand Cañon of the Colorado and the lofty escarpment of the Colorado Plateau; to the biologist, because it is here that the Lower Sonoran Zone finds its extreme limit in a northerly and easterly direction, and because a large number of species of mammals, birds, reptiles, and plants occur here which have not been recorded heretofore from any locality north of southern Arizona. It is interesting from the economic standpoint because much of it is plentifully watered. The Virgin River, the largest tributary of the Colorado from the north rising on the Colorado Plateau, crosses through the Hurricane Cliffs, traverses the entire length of the valley and passes out through a deep cañon it has cut for itself through the [Beaver Dam] Mountains. The Santa Clara River rises far to the northward and makes a broad circuit to the west and empties into the Virgin [River] near the middle of the valley. Besides these principal streams there are many springs furnishing excellent water. The presence of so much water which is of such inestimable value in most parts of the great interior basins, long since induced the Mormons to settle in the valley. And the fact that the valley lies along the border of the Lower Sonoran Zone makes it possible to grow many valuable fruits that will not thrive further north, leading to the rapid growth of the early settlements until at present the town of [Saint] George is the largest city in southern Utah, and within a few miles of it are several smaller thriving settlements.

The valley is walled in on the east side by the lofty Hurricane Cliffs, the summit of which is about 4,000 feet above the level of the valley below. These cliffs extend in a north and south direction as far as the eye can reach. On the north the valley is hemmed in by a series of cliffs of different colors, chiefly red or vermillion, and behind these still is lofty ~~Yellow-Pine~~ Pine Valley Mountain from whose summit the snow never melts. The

[Beaver Dam] and Charleston mountains on the west and the mountains near the Colorado River on the south complete the natural fortifications by which the valley is surrounded.

In the town of [Saint] George the following trees have been planted along the streets and are thriving: cottonwoods, locusts, China-trees, willows, *Ailanthus* [sic], mulberry, osage orange, fig, tamarisk, and many fruit trees. Peaches and raisin-grapes are raised in great abundance.

Among the plants growing in the Santa Clara Valley near Saint George are the following: *Pleuchia borealis* which is enormously abundant along the river flats forming large thickets, *Salix*, various species of *Atriplex*, *Grayia spinosa*, *Salazaria*, *Krameria parvifolia*, *Salix*, and two species of *Fraxinus*.

Among the common birds in the streets of the town are: Bullock's Oriole, Lazuli [Bunting], House Finch, Arizona yellow-bird, Ash-throated Flycatcher, Yellow Warbler, the Black-chinned Hummingbird, and Phainopepla.

Most of the lizards of the Sonoran fauna are common in the Santa Clara Valley including the remarkable chuckwolly [sic] (*Sauromalus ater*).

Among the mammals which are of special interest are the kangaroo rats (*Dipodomys merriami* [*vulcani*] and *D*. [*microps celsus*]), [Long-tailed] Pocket Mouse (*Perognathus formosus*) the type of which is from the red cliffs near Saint George, and the little spotted skunk (*Spilogale gracilis*).

The late Dr. C. C. Parry, a botanist, visited [Saint] George in the spring of 1874. Writing of the change of climate experienced in entering the valley from the north he states: "Not before passing over the rim of the great basin, within a short day's travel of my destination, was there any appearance of advancing vegetation; but on dropping down suddenly into the Valley of the Virgin, on April 5th, the whole floral aspect assumed a change almost magical; orchards in full bloom including peach, almond, and apricot, marked at a distance by a perfect blaze of blossoms the scattered settlements, while the lucerne fields with their deep green foliage were nearly ready for a first forage crop" (from an article entitled Botanical Observations in Southern Utah in 1874. American Naturalist, Vol. IX, No. 1, Jan. 1875, p. 16).

The botanist Dr. C. C. Parry who visited Pine Mountain from Saint George in the early part of June, 1874, writes: "When exposed to the withering summer heat of 105˚ to 110˚ F in the Valley of the Virgen [sic], it was tantalizing to see within twenty miles to the north the rugged slopes of Pine Mountain streaked with patches of snow…Accordingly, on the 8th of June, I undertook an excursion to Pine Valley, occupying an extensive basin on the northwest slope of Pine Mountain, thirty miles by the travelled road from St. George. Our route, which if practicable would have followed up the valley of the Santa Clara to its extreme sources, mounted by a series of very steep ascents to the abrupt sandstone ridges bounding the valley on the left. Higher up the rugged features of the bald uplands are greatly exaggerated by a confused intermingling of sedimentary and igneous rocks. Recent volcanic overflows had partly filled up the denuded sandstone ravines with floods of black, scoriaceous lava. Some distance further on the source of these igneous products is brought to view in two distinct volcanic cones with clearly defined craters. The course of the Santa Clara through this confused labyrinth of aqueous and igneous deposits is completely hid from view in inaccessible chasms…Our upward route occasionally crossing the clear dashing stream of the Santa Clara along its upper course, finally emerging into the wide open basin of Pine Valley, lying at the base of steep mountain ridges heavily timbered with pine and spruce. The regular outlines of this basin at once indicated it as the bed of an ancient lake, since drained throughout the deep gash through which the Santa Clara courses to mingle its tribute of melting snow with the turbid waters of the Virgen. The atmospheric coolness of this elevated district afforded a refreshing contrast with the torrid heat of the lowlands,

and was especially noticeable in the vegetation, which exhibited a more northern aspect. In the cultivated fields the difference was equally striking; wheat then ready for harvest at the mouth of the Santa Clara was just spreading out its early leaves at its upper sources; cotton-woods which several weeks before had opened their bolls in St. George were barely in bud at Pine Valley. In fact the flowering season in these elevated districts was only just commenced, and the bald alpine ridges toward the summit of the range showed no signs of advancing vegetation, being still occupied by scattered snow drifts" (From an article entitled Botanical Observations in Southern Utah, in 1874. Am. Nat., Vol. IX, No. 4, April 1875, pp. 199 and 200).

Sarcobatus Flat, Nevada

Sarcobatus Flat is a broad flat-bottomed basin on the west side of Ralston Desert, Nevada. It is north of the north arm of the Amargosa Desert from which it is separated by a low range of mountains. It measures about 55 kilometers in length by 20 [kilometers] in breadth (approximately 35 X 12 miles) and is bounded on the west by the Grapevine Mountains and Gold Mountain, on the east by a high escarpment running south from Stonewall Mountain, and on the southeast by some irregular hills that lie between it and Oasis Valley. Grapevine Cañon connects it with the northwest arm of Death Valley, and a narrow valley leads away to the north between Stonewall Mountain and Mount Magruder, opening into [Lida] Valley on the west and pushes on until lost in a series of low deserts leading to the Columbus salt marshes. Immediately south of the entrance to Grapevine Cañon is the ruin of an abandoned quartz mill and a deep dug well at which water may still be had. The place is known among the prospectors as Thorpe Mill. [Lida] Valley is a small pocket between the eastern spurs of Mount Magruder and Mount Gabb. It contains a spring.

The bottom of Sarcobatus Flat is a large dry lake containing considerable borax in places and one or more poison wells of an intensely alkaline blackish liquid resembling lye. Like many other dry lakes in southern Nevada and California it comprises extensive areas of absolutely bare, alkaline clayey soil, and patches of self-rising ground, but it differs from the others in having in one place numerous clay hills or dunes about the height of a man on horseback covered with the salt greasewood (*Sarcobatus vermiculatus*), from which it was named. Another peculiar feature of the clay flat is that it terminates on the west (south of Grapevine Cañon) in a singular flat-topped escarpment or dike several miles in length and 1 1/2 or 2 meters (5 to 6 1/2 ft.) in average height. The lowest part of the basin seems to be along this dike, for a severe storm before we passed left numerous shallow pools of water here while none was found elsewhere. The dry lake is surrounded by gravel slopes more or less mixed with clay and covered with the characteristic vegetation of the upper part of the Lower Sonoran Zone—the altitude being slightly above the *Larrea*. The south part of the valley is covered with *Atriplex confertifolia* very pure and free from mixture with other plants. Nearer the clay bottom it is invaded by a little *Atriplex parryi* and *A. canescens*, *Aplopappus monactis*, *Suaeda suffrutescens*, *Artemisia spinosa*, *Ephedra nevadensis*, *Tetradymia glabrata*, *Grayia spinosa*, *Dalea polyadenia*, *Eurotia lanata*, *Stanleya* [*pinnata*], and a new species of *Sarcobatus* (*S. baileyi* Coville) which grows in gravelly soil and was in fruit June 2. Bunches of sand grass (*Oryzopsis*) were abundant in places and flocks of doves were feeding on its rich seeds. There is no *Larrea* or *Franseria* in this basin, although *Larrea* comes up through Grapevine Cañon to the edge of the valley from the northwest arm of Death Valley, and several Lower Sonoran species inhabit the valley.

Among mammals the [Big Desert] Kangaroo Rat (*Dipodomys deserti*) is common, and the specimens collected here differ from those found elsewhere in being more deeply suffused with [illegible; ochorous?]. A large-bodied mouse (*Chaetodipus*) [sic] also is common and two bats were killed, namely *Antrozous pallidus* and [*Pipistrellus*] *hesperus*. The Horned Rattlesnake (*Crotalus cerastes*) was obtained, as were also the following lizards: *Callisaurus ventralis*, *Crotaphytus wislizenii*, *Cnemidophorus tigris*, *Uta stansburiana*, and *Phrynosoma platyrhinos*.

Timpahute Valley, Nevada

Timpahute Valley (Desert Valley) is a shallow basin in south-central Nevada, between the Pahranagat Mountains on the east and the Timpahute Mountains on the west. It is in the upper or *Grayia* belt of the Lower Sonoran Zone, and no *Larrea* or *Franseria* grow on its bottom, the altitude of which is about 1,460 meters (4,800 feet). Forests of Tree Yuccas come down from the mountains on both sides of the very edges of the valley, and the bottom is covered with the following desert brush: *Atriplex confertifolia*, *A. canescens*, *Artemisia spinescens*, *Lycium andersonii*, *Tetradymia glabrata*, *Menodora* [*spinescens*], *Hymenoclea salsola*, *Eurotia lanata*, and *Grayia spinosa*.

The most interesting incident connected with this desert was the capture there of a specimen of Cassin's Sparrow (*Peucaea cassini*), the only one taken by the Expedition.

Timpahute And Desert Mountains, Nevada

The Timpahute Mountains [Range] and Desert Range form a continuous north and south range between the Timpahute Desert on the east and Emigrant Valley and the north arm of Indian Spring Valley on the west. The Las Vegas Range is probably an eastern offshoot or branch of the Desert Range. The south end of the Desert Range is in Indian Spring Valley directly north of Charleston Peak. The dividing line between the two parts of the range ~~known respectively as the Desert and Timpahute Range~~ is not well marked, but the term Desert Range is generally applied to that part which is south of the pass leading from Timpahute Desert to Emigrant Valley, which crosses the range just north of Mud or Summit Spring, while the term Timpahute [Range] is applied to that part of the range north of this pass. With respect to the northward extent of the Timpahute Range we obtained no precise information. A high peak known as Timpahute Peak rises a few miles to the north of the pass and apparently is clothed with juniper and Nut Pine. South of this peak the range is devoid of timber, and south of Quartz Spring, it is one of the most barren and desolate of the desert ranges~~, as may be seen from the accompanying photograph~~. South of Timpahute Peak, the range is almost destitute of water, but two 'springs' being known and these at best are but dirty water holes from which there is no outflow. The northernmost of these (Summit or Mud Spring) is on the west slope near the summit and about two miles south of the pass. The other, Quartz Spring, is at the base of the Desert Range on the west side of the Timpahute Valley about 30 miles south of Summit Spring and is north of Indian Spring, which is on the south side of Indian Spring Valley at the north foot of the Charleston Mountains. The [Las] Vegas Range seems to be a branch of the Desert Range which it greatly resembles in general appearance. The relations of these ranges to one another and to the Sheep Range [illegible] and other mountains south of Pahranagat and Timpahute valleys is not well understood and is an interesting field for future exploration.

White Mountains, Inyo County, California, And Esmeralda County, Nevada

The White Mountains are a long north and south range on the boundary between California and Nevada, separating Owens Valley on the west from Fish Lake Valley on the east. Next to the High Sierra they constitute the most lofty and imposing clearly defined range in the United States, rising in an unbroken wall from a base level of about 5,000 feet to an altitude of upwards of 14,000 feet, and were capped with perpetual snow. On the north they are separated but slightly from the High Sierra, of which they are generally considered an offshoot; and on the south they are directly continuous with the Inyo Mountains. The highest peak is some distance south of the Nevada boundary and is [illegible]. A large plateau extends for many miles along the summit of the range and was deeply buried in snow as late as the beginning of July 1891. The Yellow Pine is common in the higher parts of the range, succeeding the Nut Pine which is very abundant a little lower down. At suitable elevations, there are extensive sage plains inhabited by the sage or [Great Basin] Chipmunk ([*Eutamias*] *minimus pictus*) while another species of chipmunk ([*Eutamias*] *panamintinus*), discovered by this expedition, lives in the juniper

belt, its range joining that of the Great Basin chipmunk. Still higher in the Boreal Zone of the higher parts of the range, a brilliantly colored form of the [Inyo] Chipmunk ([*Eutamias quadrivittatus inyoensis*]) abounds. Deer and mountain sheep are common in the White Mountains and elk are said to occur in the more inaccessible places. In the Nut Pine belt, the [Mountain] Bluebird breeds commonly, together with the [Ash-throated] Flycatcher (*Myiarchus cinerascens*), Woodhouse's Jay (*Aphelocoma woodhousei*), Piñon Jay (*Cyanocephalus cyanocephalus*), and [Cabanis's] Woodpecker (*Dryobates villosus hyloscopus*). The [Sagebrush] Lizard (*Sceloporus graciosus*) is common in the sage zone, and a black species of the same genus is frequently seen basking on the rocks. The [True White-footed] Mouse ([*Peromyscus truei*]) and two other species of the same genus ([*Peromyscus*] *eremicus* and [*P. maniculatus sonoriensis*]) are abundant; and the [Mount Magruder] Pocket Mouse (*Perognathus* [*parvus*] *magruderensis*) is common in the sagebrush.

Virgin River Valley, Utah, Arizona, And Nevada

The Virgin River rises in the great Colorado Plateau, and after a somewhat remarkable and adventuresome course pours its poison waters into the Colorado River about midway between the mouth of the Grand Cañon and the Great Bend of the [Colorado River]. Breaking through the Hurricane Cliffs in a series of cascades and waterfalls, it drops into the fertile valley [where Saint] George occurs in southwestern Utah, and then crosses the extreme northwestern corner of Arizona where it cuts its way in a deep narrow cañon through a lofty range of mountains (the [Beaver Dam] and Virgin) on the west side of which it receives a small tributary from the north known as [Beaver Dam] Creek—a rivulet remarkable for the excellence of its water. Entering Nevada, it winds southward through a sandy alkali desert to the Colorado River, receiving a single tributary known as the Muddy River, whose waters, as [might not] be expected, are very much clearer than those of the turbid Virgin into which it flows. The water of the Virgin [River] is drinkable throughout the upper part of its course in Utah, but before reaching Nevada it becomes so strongly impregnated with salt and alkali as to be unfit for use; in fact, except during spring freshets, its waters are said to be actually poison. At the time of our visit (early May) the Virgin was a broad and rapid river, flooded from the melting snows of the Colorado Plateau and heavily laden with sand and red mud. Though diluted by this great volume of pure water it was still strongly impregnated with salt and alkali. There being no other water in this country we were forced to drink it and fortunately suffered no serious consequences. Lieutenant Eric Bergland of the Wheeler Survey, who visited the river in August 1875, states: "The water of the Virgin was unfit for use by man or animals. It was intensely saline, its color brick-red, and surface covered with floating slime of the same color" (Appendix JJ, Rept. Chief of Engineers, 1876, p. 112). Dr. Oscar Loew, chemist and mineralogist of the Wheeler Expedition, described the valley and water of the lower Virgin [River] in the following language: "Not a single settlement exists in this apparently very fertile bottom—a fact that is understood as soon as the water of this river or of any well sunk in the valley is tasted; it being not only very disagreeable, resembling in taste glauber and epsom salts, but its effects are of an alarming nature, diarrhea and vomiting being the immediate consequences of having tried to satisfy the burn-thirst by means of this water. Cattle using it for a few days in succession invariably die; also many human beings become sacrificed to it. Hence the water is pronounced poisonous, and people avoid settling in the valley" (Appendix JJ, Rept. Chief of Engineers, 1876, p. 191). Dr. Loew adds that analysis of the water showed it to contain potassium sulphate, sodium sulphate, calcium sulphate, magnesium sulphate, sodium chloride (189 grams in 100 liters), and traces of alumina, iron, and phosphoric acid, and that "a reddish mud is kept in suspension, its average quantity being 170 grams per 100 liters".

The bed of the Virgin [River] consists chiefly of quicksand. The road from the Mormon settlements in Utah to Stone Ferry at the mouth of the Virgin in southeastern Nevada crosses the bed of the stream more than 30 times, and during high water in spring is practically impassable because of the danger of fording over the treacherous quicksand. The river bottom throughout its upper half in Nevada is narrow and confined between steep escarpments, from which the Virgin Mountains rise on the east and the Mormon Mountains on the west, at some distance

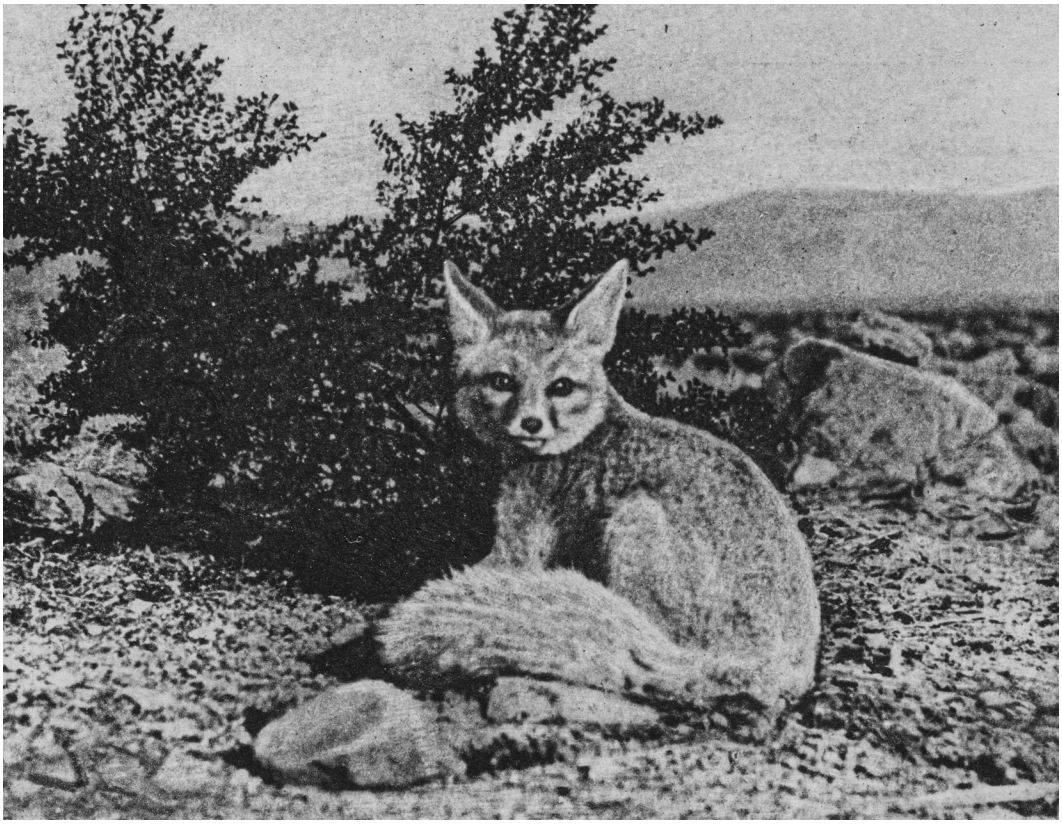
from the river. Near the mouth of the Muddy [River] these mesas break down and the river bottom becomes much broader, frequently expanding into extensive salt and alkali flats covered with salt grass and other saline plants. From Bitter Spring in the lower part of the Virgin [River] Valley a natural roadway follows the winding of low open cañons across the Muddy Mountains to a broad wash that leads to the site of old fort Callville near the Great Bend of the Colorado River, but from this point westerly to Las Vegas Valley two obstructions exist. The first comprises the mountains that abut against the actual bend of the river; the second is an impassable bog in the upper part of [Las] Vegas Wash. Both may be avoided however, though not without encountering serious difficulties, by means of wide detours in the first instance to the north; in the second to the south. The water along this route is scant, far between, and unfit for drinking. The only water between the Great Bend of the Colorado and the Virgin [River] is known as Bitter Spring, concerning which Dr. Loew of the Wheeler Survey writes as follows: [sic; there is no text that follows].

Since in summer the water of the Virgin [River] itself is undrinkable, there is practically no water between the [Great] Bend of the Colorado and the small Mormon settlements on the lower Muddy [River].

Of these Mormon settlements a word may be said. Three of them exist at the present time, known respectively as [Saint Joseph], Overton, and [Saint] Thomas. The first consists of a single ranch, the second of two or three small ranches, the third of about half a dozen. Tradition has it that in former days they were large and prosperous settlements believed to lie within the territorial limits of Utah, but were abandoned when found to be on the Nevada side of the line and subject to heavy taxes about to be levied by the Nevada officials. These settlements doubtless attained their maximum at the time when Fort Callville was built by the Mormons at the 'head of navigation' on the Great Bend of the Colorado [River], a belief being then prevalent that a permanent and practicable outlet to the Pacific coast existed by means of the water route down the Colorado River, thus connecting Utah with the Pacific [Ocean] by a much shorter route than that from Salt Lake to the nearest important center either eastward or westward. The settlements along the lower Muddy [River] were thus on the direct line of travel between the head of navigation on the Colorado [River] and the fertile valley containing Saint George in southern Utah. But the exceedingly limited size of the areas adaptable to agriculture, owing to the large quantity of salt and alkali in the soil and the scarcity of good water, coupled with the abandonment of Fort Callville, suffice to explain the rapid decline of the Mormon towns on the Muddy [River]. The present thrifty condition of Bunkerville, situated higher up on the Virgin [River] where the water is less strongly impregnated with salt and alkali, shows what may be accomplished where the conditions are favorable.

MAMMAL REPORT: AN ACCOUNTING OF COLLECTIONS AND OBSERVATIONS MADE DURING THE DEATH VALLEY EXPEDITION OF 1891

BY DOUGLAS L. THRELOFF



Desert Kit Fox

INTRODUCTION

Death Valley Expedition biologists collected a wide array of vertebrate, invertebrate, and plant specimens. Their primary focus, however, was devoted to collecting mammal specimens. During the course of that expedition, those biologists collected a total of 5,659 mammal specimens across California, Nevada, Arizona, and Utah. Few other expeditions in the mid- or late-ninetieth century collected as many specimens over such a large geographic area.

When many of those mammal specimens were collected, the taxonomic identity and relationships of many of the species and their associated genera were poorly understood. For example, the number of species and subspecies associated with the modern-day *Peromyscus*, *Perognathus*, *Dipodomys*, and *Tamias* genera were not known

then, and several of the scientific names Expedition biologists used to catalog their specimens are no longer used. Examples include the *Hesperomys*, *Chaetodipus*, *Dipodops*, and *Eutamias* genera.

In spite of those taxonomic issues, the large number of mammal specimens the Expedition biologists collected provided the raw material that was later used to more accurately determine mammal taxonomic diversity, especially in the states of California and Nevada. The importance of the Death Valley Expedition mammal specimens is highlighted by the fact that those specimens are prominently listed as specimen records in the North American Fauna (NAF) series volumes published over a 42-year period. The bookends for those volumes began with the publication of the NAF 10 volume published in 1895 and that provided a synopsis of American shrews in the genus *Sorex* (Merriam 1895), and ended with the NAF 56 volume published in 1938 that provided a revision of North American ground squirrel taxa and a classification of the North American Sciuridae (Howell 1938).

Today, the vast majority of the mammal specimens from the Expedition are stored in the Smithsonian Institution's National Museum of Natural History (NMNH), Mammals Division. The details associated with those specimens can be found using that museum's mammal website https://collections.nmnh.si.edu/search/mammals/. As incredibly valuable as that resource is, it possesses five limitations:

1. The geographic place names attributed to many of the Expedition specimens is not standardized, which can make it difficult to conduct queries to find specimen records based on locality names. This mammal report resolves that issue by providing standardized locality names for each Expedition specimen.
2. Seventy-seven of the 5,659 specimens in the Expedition biologist's field catalogs and that were used to track their specimen collections appear to be absent in the NMNH's mammal website. This mammal report resolves that issue because it provides an accounting of the specimens that were collected based on those biologist's field catalogs, not the USNM number assigned to each specimen.
3. The NMNH does not provide Internet access to the special reports the Expedition biologists developed for many of the areas where they collected specimens, and that provide first-hand accounts about the relative abundance, habits, and habitat associations for some of the mammals they collected or observed. This publication resolves that issue by providing relevant details from those special reports in the mammal summaries provided below.
4. There is no single written reference providing a detailed accounting of all the mammal specimens collected during the Death Valley Expedition, especially since the North American Fauna Number 6 volume was never published. For the first time, the species accounts provided below address that issue.
5. And finally, accurate coordinates that can be used to determine where individual specimens were likely collected are not provided on the NMNH website. This issue could be addressed by publishing a gazetteer listing all the locations where Death Valley Expedition mammal, bird, reptile, amphibian, fish, and plant specimens were collected. For each of those locations, latitude/longitude coordinate pairs should be provided with a quantified estimate of error, along with miscellaneous information for each collection locality.

METHODS

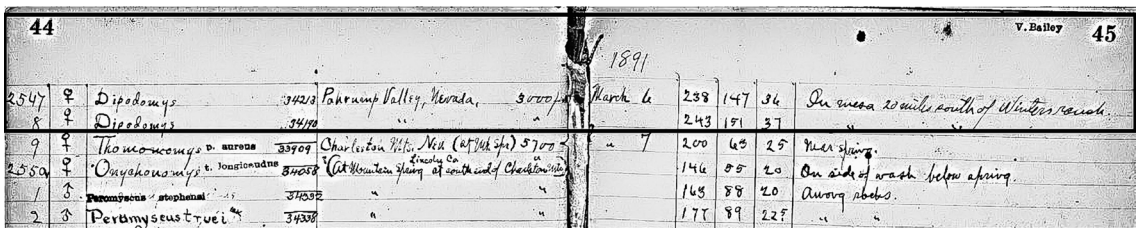
The methodology for producing the Mammal Report is provided below. It reflects the effort to reconstruct what the historical mammal taxonomy and nomenclature would have been for different taxa if the North American Fauna Number 6 volume had been published in the 1890s or early twentieth century.

Definitions

A "field catalog" is a document a biologist used to record data pertaining to a particular specimen at the time it was collected. Death Valley Expedition biologists typically recorded the following information in their field catalogs:

- A unique biologist-specific catalog number for each specimen.
- Sex of the specimen, i.e., male or female.
- Age of the specimen, i.e., adult, immature, or juvenile. Most specimens were not assigned an age.
- Latin scientific name for a specimen. In most cases, the taxon assignments in the field catalogs of the Expedition biologists were subsequently modified by NMNH staff long after a specimen was collected, and thereby reflect NMNH staff determinations of what a specimen's taxonomic identity is or was. For the purposes of the Mammal Report, these NMNH assignments are considered to be preliminary historical taxonomic names until final historical taxonomic names were assigned using the methods described below.
- Place where specimens were collected, e.g., Battle Mountain, Nevada.
- Date of collection.
- Specimen total length, in millimeters.
- Specimen tail length, in millimeters.
- Specimen hind foot length, in millimeters.
- Miscellaneous remarks. These commonly provide the type of habitat the specimen was collected in (e.g., "among rocks"), or the elevation a specimen was collected at.

An example of a record from biologist Vernon Bailey's field catalog is provided in the image below for his catalog number 2548 specimen. Bailey assigned a specimen genus name of "Dipodomys" to the specimen, and he did not identify a specific epithet. Note the three columns on the right side of the catalog entry that provide measurement data for that specimen's total, tail, and hind foot lengths in millimeters. And while a geographic location of "Pahrump Valley, Nevada, 3,000 feet" is assigned to that record, it also mentions a remark of "On mesa 20 miles south of Winter's Ranch", which can be used to assign a more precise collection location than Pahrump Valley. Also note the taxon assignment for field catalog record number 2549 has been changed by NMNH staff from the original "*Thomomys*" assignment to "*Thomomys p*. [*perpallidus*] *aureus*"; that assignment was likely made by a *Thomomys* taxonomic expert many years after Bailey collected that specimen.



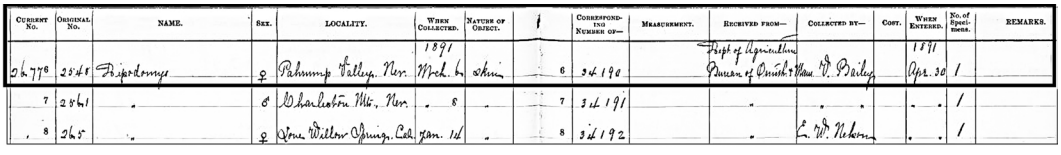
The records and historical taxonomic names in the Mammal Report are based on the following biologist field catalogs:

- Vernon Orlando Bailey (Bailey 1891).
- Edward William Nelson (Nelson 1891).
- Theodore Sherman Palmer (Palmer 1891).
- Albert Kenrick Fisher (Fisher 1891).
- Frank Stephens (Stephens 1891).
- Basil Hicks Dutcher (Dutcher 1891).

A "ledger" is the document NMNH staff used to record the receipt and curatorial cataloging of specimens. Ledger data typically includes:

- Current Number: NMNH catalog number assigned to a specimen.
- Original Number: Unique biologist-specific field catalog number assigned to a specimen.
- Name: Latin scientific name assigned to a mammal specimen by the collecting biologist at the time the specimen was collected. For many or most Expedition specimens, this name was limited to a genus name because the taxonomic relationships among many of the mammal genera, species, and subspecies groups was not well known in 1891. Many of these genera names are now obsolete as a result of subsequent taxonomic revisions. For example, the genus *Hesperomys* has been replaced by *Peromyscus*.
- Specimen sex.
- Locality: Place the biologist collected the specimen.
- When Collected: Date the biologist collected the specimen.
- Nature of Object: Skull or skin.
- Received From: Name of the government agency providing the specimen. For example, Department of Agriculture, Bureau of Ornithology and Mammalogy.
- Collected By: Name of the biologist collecting the specimen.
- When Entered: Date the specimen was accessioned into the NMNH collections.
- No. of Specimens: Always equal to 1 specimen per record.
- Remarks: Miscellaneous information pertaining to the specimen.

As an example, the NMNH ledger entry for Vernon Bailey's field catalog number 2548 specimen is provided in the image below for illustration purposes. Note that the name assigned to that specimen is simply listed as "*Dipodomys*" with no specific epithet.



CURRENT NO.	ORIGINAL NO.	NAME.	SEX.	LOCALITY.	WHEN COLLECTED.	NATURE OF OBJECT.		CORRESPONDING NUMBER OF—	MEASUREMENT.	RECEIVED FROM—	COLLECTED BY—	COST.	WHEN ENTERED.	No. of Specimens.	REMARKS.
24778	2548	Dipodomys	♀	Pahrump Valley, Nev.	1891 Mch. 6	skin	6	24190		Dept of Agriculture Bureau of Ornith & Mam.	V. Bailey		1891 Apr. 30	1	
7	2561	"	♂	Charleston Mts., Nev.	" 8	"	7	24191		"	" "		" "	1	
8	2565	"	♀	Lone Willow Spring, Cal.	Jan. 14	"	8	24192		"	E. W. Nelson		" "	1	

A "field journal" is a document written by a biologist. It provides daily notes on where they traveled, which specimens they collected, observations about the vegetation in the areas visited, and other miscellaneous information.

A "special report" is a topical report written by a particular biologist for a particular geographic area and that summarizes observations pertaining to bird or mammal taxa, or the physiography, of an area. The Expedition special reports are stored in Record Unit 7176 of the Smithsonian Institution's archives and are organized in multiple boxes and folders. The mammal special reports are one to 29 pages in length. They provide critical contextual information for a taxon such as the geographic location where a taxon was collected or observed, the habitat type a taxon occupied, its abundance, and behavior. The special reports that form the basis for records in the mammal summaries are listed in the References/Biologist Special Reports section of this publication.

A "historical taxonomic name" is the Latin species or subspecies name that would have likely been assigned to a specimen if the North American Fauna Number 6 volume had been published in the 1890s or early twentieth century.

A "NMNH taxonomic name" is the Latin species or subspecies name assigned to a specimen in the NMNH's mammal website in January 2023. A partial example of such a record is provided in the image below for Vernon Bailey's field catalog number 2548 specimen. The number of database fields in the example below has been trimmed for brevity sake.

Museum Abbreviation	Catalog Number	Specimen Count	Current Identification	Date Collected	Precise Locality	Collector(s)	Other Numbers (Type: Value)	Measurements
USNM	26776	1	Dipodomys merriami merriami	6 Mar 1891	Pahrump Valley	Bailey, V.	Mammals Field Number: 2548; Other Catalog Number: A0034190	Total Length: 243mm; Tail Length: 151mm; Hind Tarsus Length: 37mm

Assignment of Historical Taxonomic Names to Mammal Specimens and Observations

The procedure for assigning a final historical taxonomic name to each Expedition specimen or observation used the following procedure:

1. In late 2021 or early 2022, the author of the Mammal Report contacted Ms. Ingrid Rochon, who then worked at the Division of Mammals at the Smithsonian Institution, and he requested digital copies of the Expedition biologist's field catalogs. She conducted a large series of queries to harvest several hundred individual TIF files that each provided one page from each of the biologist's field catalogs.
2. The TIF file field catalog pages were aggregated and pasted in biologist-specific Microsoft Word documents, thereby producing six documents listing the field data for each biologist's mammal collections during the Death Valley Expedition.
3. The 10 types of data for each specimen (e.g., biologist-specific field catalog number, collection locality, etc.) in the biologist-specific Word documents were harvested and entered in biologist-specific Excel files. After all those data were entered into the biologist-specific Excel files, all the data in those files were then compared to the data in the Word documents to evaluate their accuracy and completeness, and as needed the Excel data were modified to develop final, complete, accurate data. In regards to the taxon names in the field catalogs that were modified/assigned by NMNH staff, those names were entered in to the biologist Excel spreadsheets as preliminary historical taxonomic names.
4. The six biologist Excel files were combined into a single master mammal Excel file.

5. The biologist's records in the Excel file were trimmed to only include those that occurred during the dates when each biologist worked on the Expedition. Those dates are identified in the Sequence of the Parties subsection in the General Report.

6. Collection locality names for all the mammal records in the master mammal Excel file were standardized to improve the ability to query data and identify collections from the same geographic location. Where possible, place names in the *List of Localities Visited by the Death Valley Expedition* document (Palmer 1893) were adopted. For example, the collection locality names "Bennetts Well" and "Death Valley (Bennetts Well)" in the field catalogs were transformed to the name "Bennett Wells" which occurs in the Palmer document.

   Abbreviations in place names were eliminated, e.g., references to the "Argus Mts." were transformed into "Argus Mountains". In cases where a mammal catalog record used the word "range" (e.g., "Argus Range") and Palmer noted an analogous mountain feature with the name "mountain" (e.g., "Argus Mountains"), the standardized locality name adopted the word "mountain" (i.e., Argus Mountains) unless there was a bonified use of the word "Range". For example, the place name "Panamint Range" is a bonified name because it refers to the combination of the Panamint and Cottonwood mountains, and the place name "Panamint Range" appears on maps that were contemporaneous with the Death Valley Expedition.

   If the place name associated with a mammal record did not align with Palmer's place names, then topographic maps that were contemporaneous with the Expedition were examined to identify geographic place names that could be incorporated into the Excel file.

   And finally, the syntax of the collection locality names was standardized and organized in a more hierarchical fashion, especially in the case of names associated with rivers and locations where mileages from a location were initially noted. For example, a collection locality of "Middle Fork of American River (3 mi from Auburn)" was transformed into "American River, Middle Fork, 3 miles from Auburn". And "10 mi south of Adobe Station" was transformed into "Adobe Station, 10 miles south of".

7. Final historical taxonomic names were assigned based on taxonomic treatise that were contemporaneous with the Expedition to the maximum extent possible. This approach was taken to ensure the Mammal Report's taxon names aligned with the Latin names: (a) in other NAF series publications, and would have likely appeared in a NAF 6 volume if that document had been published with its sister NAF 7 document, or (b) other taxonomic treatise that were generally contemporaneous with when the Death Valley Expedition occurred. The incorporation of the overarching NAF series taxonomy and nomenclature in to the Mammal Report also builds internal consistency across that series, and reinforces the historical context of specimens collected during the Expedition.

   The lack of binomial or trinomial mammal scientific names in ledger entries associated with most of the Expedition collections, and subsequent revisions to the vast majority of the taxon names in the biologist field catalogs by NMNH staff suggests mammal nomenclature was not sufficiently mature to make species and subspecies assignments in 1891.

   Taxon assignments in NAF series volumes published between 1889 and 1938 were based on many of the same phenotypic characteristics used in taxonomic treatises published in the twentieth and twenty-first centuries. These included specimen total, tail, and foot length data, variations in the color of different parts of the body, dentition, skull measurements, and geography/elevation. Because the author of the Mammal Report only had access to total, tail, and foot length data, and the geographic collection location for Expedition specimens, those features were predominantly used to make the final historical taxonomic assignments reflected in the Mammal Report. Fortuitously, the NAF series publications after NAF Number 10 provide a detailed list of localities where each taxon was collected. In many cases,

congeneric taxa were not collected at a particular location, and that fact was taken advantage of as final historical taxonomic names were assigned to mammal specimens collected during the Expedition.

In most cases, the historical taxonomic names in the Mammal Report align with those appearing in group- or genus-specific references in the North American Fauna series. When applicable NAF documents that identified where different mammal taxa occurred were lacking, final historical taxonomic names were assigned using nomenclature from other substitute treatises published in the late nineteenth or early twentieth century. Examples include: (1) Hollister's 1914 *A Systematic Account of the Grasshopper Mice*, and (2) Grinnell's 1922 *A Geographical Study of the Kangaroo Rats of California*. When applicable NAF volumes or substitute treatise were not available, the nomenclature in Grinnell (1913) or its successor Grinnell (1933) publication were adopted for collections in California; and for taxa collected in Nevada and Utah, the nomenclature in Hall's 1946 *Mammals of Nevada* and Durrant's 1952 *Mammals of Utah, Taxonomy and Distribution* were adopted, respectively.

Table 1 identifies the documents used to assign final historical taxonomic names to mammal specimens collected during the Expedition.

The procedure for assigning an individual Expedition specimen to a specific historical taxonomic name based on the aforementioned references used the following hierarchical categories in order from most, to least, important trait:

- *Exclusive geography*. For a particular mammal group, e.g., voles, a taxon only occurred at one location according to a NAF series publication or substitute taxonomic treatise. For example, in the case of an Expedition collection of a vole at Mount Magruder near Pigeon Spring, collections at that location were assigned a historical taxonomic name of *Microtus curtatus* because the NAF Number 17 vole publication indicated the only vole taxon at that location was *Microtus curtatus*.
- *Non-overlapping congenic morphological measurements*. In cases where exclusive geography did not occur (i.e., two or more congeneric taxa were documented at one location), and the two taxa exhibited non-overlapping body measurements (i.e., total length, tail length, or foot length), the presence of one or more non-overlapping body measurements were used to assign a specimen to a particular historical taxonomic name. For example, *Peromyscus maniculatus sonoriensis* and *Peromyscus truei* both occur on the Reese River at the Lander–Nye County line. The markedly greater total length of *Peromyscus truei* makes it easy to assign specimens with those total lengths to that taxon at that locality and not to *Peromyscus maniculatus sonoriensis*.
- *Overlapping congenic morphological measurements*. In cases where exclusive geography did not occur and congeneric taxa at a locality exhibited overlapping body measurements, a historical synonym of the NMNH taxon name was assigned to the Expedition specimen if the NMNH's analogous synonym had measurements that were generally consistent with those in the applicable NAF series document. For example, at Big Cottonwood Meadows in the Sierra Nevada, three chipmunk taxa occur. Two of the NAF Number 52 chipmunk taxa at that location, i.e., *Eutamias quadrivittatus sequoiensis* and *Eutamias quadrivittatus inyoensis*, have overlapping body measurements, and the third taxon, *Eutamias alpinus*, has phenotypic measurements that do not overlap the other two taxa. In the case of the NMNH specimen with catalog number 29147 (i.e., *Tamias speciosus sequoiensis*), that specimen in the Mammal Report was given a historical taxonomic name of *Eutamias quadrivittatus sequoiensis* because that taxon has measurements that align with the NMNH and historical taxonomic synonyms.
- *Bat specimens*. Death Valley Expedition bat specimens were assigned a historical taxon name based on the nomenclature in the NAF Number 13 *Revision of the North American Bats of the Family Ves-*

Table 1. References used to assign historical taxonomic names to mammal specimens and observations pertaining to the Death Valley Expedition. CA = California, NV = Nevada, and UT = Utah.

Taxonomic Group	Citation	NAF#	Reference
Moles	Jackson (1915)	38	A Review of the American Moles
Shrews	Jackson (1928)	51	A Taxonomic Review of the American Long-tailed Shrews (Genera *Sorex* and *Microsorex*)
All bats except Free-tailed Bat	Miller (1897)	13	Revision of the North American Bats of the Family Vespertilionidae
Free-tailed Bat	Merriam (1889)	2	Descriptions of Fourteen New Species (Genera *Onychomys*, *Arctomys*, *Lagomys*, *Spermophilus*, *Tamias*, *Nyctinomus*, and *Arvicola*)
Bears	Grinnell (1913)		A Distributional List of the Mammals of California
Wolves and foxes (CA)	Grinnell (1913)		A Distributional List of the Mammals of California
Wolves and Foxes (NV)	Hall (1946)		Mammals of Nevada
Coyotes (CA)	Grinnell et al. (1937)		Fur-bearing Mammals of California, Their Natural History, Systematic Status, and Relations to Man
Coyotes (NV)	Hall (1946)		Mammals of Nevada
California Ring-tailed Cat	Grinnell (1913)		A Distributional List of the Mammals of California
California Coon (CA)	Grinnell (1913)		A Distributional List of the Mammals of California
Pallid Coon (UT)	Durrant (1952)		Mammals of Utah, Taxonomy and Distribution
Marten, Fisher, Wolverine, and Mink	Grinnell (1913)		A Distributional List of the Mammals of California
Weasels	Merriam (1896)	11	Synopsis of the Weasels of North America
Canyon Spotted Skunk, California Spotted Skunk (CA, NV)	Howell (1906)	26	Revision of the Skunks of the Genus *Spilogale*
Great Basin Spotted Skunk (UT)	Durrant (1952)		Mammals of Utah, Taxonomy and Distribution

Taxonomic Group	Citation	NAF#	Reference
Northern and Southern California Striped Skunk (CA)	Grinnell et al. (1937)		Fur-bearing mammals of California, Their Natural History, Status, and Relations to Man
Striped Skunk (NV)	Hall (1946)		Mammals of Nevada
Badgers (CA)	Grinnell (1913)		A Distributional List of the Mammals of California
Badgers (NV)	Hall (1946)		Mammals of Nevada
Pacific River Otter	Grinnell (1913)		A Distributional List of the Mammals of California
Cougar	Grinnell (1913)		A Distributional List of the Mammals of California
Wildcats (Bobcats)	Grinnell et al. (1937)		Fur-bearing Mammals of California, Their Natural History, Systematic Status, and Relations to Man
Sea Lion and Harbor Seal	Grinnell (1933)		Review of the Recent Mammal Fauna of California
Grasshopper Mice	Hollister (1914)		A Systematic Account of the Grasshopper Mice
Harvest Mice	Howell (1914)	36	Revision of the American Harvest Mice (Genus *Reithrodontomys*)
Peromyscus	Osgood (1906)	28	Revision of the Mice of the American Genus *Peromyscus*
Woodrats (CA, NV)	Goldman (1910)	31	Revision of the Wood Rats of the Genus *Neotoma*
Woodrats (UT)	Durrant (1952)		Mammals of Utah, Taxonomy and Distribution
Voles	Bailey (1900)	17	Revision of American Voles of the Genus *Microtus*
Black Rats and House Mice	Grinnell (1913)		A Distributional List of the Mammals of California
Pocket Gophers	Bailey (1915)	39	Revision of the Pocket Gophers of the Genus *Thomomys*
Mount Magruder Pocket Gopher	Hall (1946)		Mammals of Nevada
Pocket Mice	Osgood (1900)	18	Revision of the Pocket Mice of the Genus *Perognathus*

Taxonomic Group	Citation	NAF#	Reference
Kangaroo Rats (CA)	Grinnell (1922)		A Geographical Study of the Kangaroo Rats of California
Kangaroo Rats and Mice (NV)	Hall (1946)		Mammals of Nevada
Kangaroo Rats (UT)	Durrant (1952)		Mammals of Utah, Taxonomy and Distribution
Jumping Mice	Preble (1899)	15	Revision of the Jumping Mice of the Genus *Zapus*
Porcupine	Grinnell (1913)		A Distributional List of the Mammals of California
Mountain Beaver	Grinnell (1933)		Review of the Recent Mammal Fauna of California
Marmots	Howell (1915)	37	Revision of the American Marmots
Ground Squirrels	Howell (1938)	56	Revision of the North American Ground Squirrels
Chipmunks	Howell (1929)	52	Revision of the American Chipmunks
Chickarees and Gray Squirrels	Grinnell (1913)		A Distributional List of the Mammals of California
Flying Squirrels	Howell (1918)	44	Revision of the American Flying Squirrels
Beavers	Grinnell (1913)		A Distributional List of the Mammals of California
Pika	Merriam (1899)	16	Results of a Biological Survey of Mount Shasta, California
Jack Rabbits, Cottontail Rabbits, and Wood Rabbits	Nelson (1909)	29	The Rabbits of North America
Elk, Deer, Antelope, and Bighorn Sheep	Grinnell (1913)		A Distributional List of the Mammals of California

pertilionidae (Miller 1897) document, or in the case of free-tailed bats the Merriam (1889) document. Because measurement data for Death Valley Expedition bat specimens was not collected, they were assigned final historical taxonomic names that are synonyms of NMNH taxonomic names.

- *Cannot Assign species*. A "Cannot Assign" species assignment was applied to 160 of the 5,659 Expedition mammal specimens that were collected. Those assignments were made when, for example, the biologist field catalog provided only marginal or no information that could be used to make a

historical taxonomic name assignment, a specimen's measurements did not clearly align with an applicable NAF series publication or substitute taxonomic treatise, the biologist field catalog assigned a specimen to one genus and the NMNH mammal website assigned the same specimen to a different genus, etc. Mammal specimens with a "Cannot Assign" species assignment are not included in the Mammal Report taxon summaries.

Assignment of NMNH Taxonomic Names to Mammal Specimens and Observations

Because readers of the Mammal Report may prefer to look at modern-day taxon names instead of historical taxonomic names, the procedure described below was used to develop corresponding historical and NMNH taxonomic names for each combination of mammal taxon and collection location in the Mammal Report. A note of caution: the modern-day taxon names assigned by the NMNH in 2023 may differ from scientific names recognized by the American Society of Mammologists in 2026. The mammal appendix (Appendix V) at the end of this document provides a cross-reference table with historical taxonomic names used by Death Valley Expedition biologists and the corresponding scientific names recognized by the American Society of Mammologists in 2026.

- Queries of the NMNH mammal website were conducted in January 2023 to collect that museum's current taxonomic classification of Expedition mammal specimens. As those queries were constructed, they relied on combinations of each Expedition biologist's last name and a year between 1890 and 1892. For example, two queries were conducted to harvest data for mammal specimens collected by Vernon Orlando Bailey in 1890 and 1891 (i.e., one query for each year). A query relating to 1892 and Bailey was not performed because he did not work on the Expedition that year. Other biologist-specific queries were executed in a similar manner for the remaining Expedition biologists who collected mammal specimens, i.e., Edward William Nelson, Theodore Sherman Palmer, Albert Kenrick Fisher, Frank Stephens, and Basil Hicks Dutcher. The NMNH website query results are produced as comma separated value (CSV) files.
- The CSV mammal collection records for the six Expedition biologists who collected mammals were combined into a single NMNH Microsoft Excel file.
- Each of the biologist's records in the Excel file were trimmed to only include those that occurred during the dates when each biologist worked on the Expedition.
- A Microsoft Access database was developed, and the following files were incorporated into that database as separate tables: (1) the aforementioned master mammal Excel file that includes the biologist-specific field catalog numbers and historical taxonomic names, and (2) the aforementioned trimmed NMNH Microsoft Excel file that included the biologist-specific catalog numbers, corresponding NMNH number, and NMNH taxonomic names.
- A select query was developed in that database to build a crosswalk table listing the Expedition historical taxonomic names and the corresponding NMNH taxonomic names for each location where mammals were collected. It used the two aforementioned Excel files and a join relationship between the USNM# in the master mammal Excel file and the Catalog Number in the NMNH Excel file to calculate a total count of each combination of corresponding historical and NMNH taxonomic names for each collection location.

Biologist Special Report Acquisition and Processing

Death Valley Expedition biologists collectively wrote 61 special reports providing mammal information. Those reports are stored in the Smithsonian Institution archives as part of Record Unit 7176. Those reports are area-, date-, and biologist-specific. For example, the 19-page Bailey (1890-1) special report provides mammal-

related information he collected in the Lone Pine, California, area between December 12 and 27, 1890. And the 2-page Stephens (1891-61) special report provides mammal information he collected at Benton, California, between July 9 and 10, 1891.

The numbers associated with the biologist special reports in the References section of this document do not always reflect a complete sequence of numbers, e.g., there is a Palmer 1891-4 and Palmer 1891-7 special report in the References/Biologist Special Reports section, but no Palmer 1891-5 or 1891-6 special report because those numbers were assigned to special reports dealing with other topics such as birds or physiography.

Special reports provide two types of information that were incorporated into the Mammal Report taxon summaries. These include: (1) contextual information in a narrative format that describes the habitat types where specimens were collected, a species' relative abundance, and more specific geographic information on where a specimen was collected as compared to entries in a biologist field catalog, and (2) substantiated observation occurrence data at locations that were not reflected in the biologist field catalogs.

The procedure for harvesting information in the special reports and potentially incorporating that data into the Mammal Report used the following steps:

1. The text in each special report was incorporated into a special report-specific Microsoft Word document. The information entered into that document included the biologist's name, place where specimens were collected or observed, date of collection/observation, taxon name, and notes pertaining to each taxon. In some cases, special reports described the individual taxon's abundance, vegetation community where a taxon occurred, distinguishing characteristics of the animals noted, and behavioral characteristics; this information was also entered into the special report Word documents.
2. The information in the Word document was then copied and pasted into a Microsoft Access special report database. That database had a table with a structure and list of fields that were identical to the master mammal Excel file used to store mammal field catalog data.
3. Data in the database for each record was assessed for completeness and accuracy by comparing the information in the database to the information in special report narratives and subsequently modified as necessary to create complete and accurate information.
4. Final historical taxonomic names for each record in the special report database were assigned. Wherever possible, the geographic locations, biologist name, dates of collection, and preliminary taxon names in the special reports were cross-referenced to historical taxonomic names in the master mammal Excel file. Records that did not follow that process were assigned final historical taxonomic names using the taxon and geographic place names in NAF series publications or substitute taxonomic treatise.
5. Each Expedition special report record was assigned to one of six record types:
    - A "collection" reflects the capture of a specimen and subsequent inclusion of that specimen in the NMNH mammal website.
    - A "substantiated observation" refers to a visual sighting, auditory observation, or other sign indicating a taxon occurred in an area, and those instances can unambiguously be correlated with a specific mammal taxon. Auditory noises, sightings, or other features that cannot be unequivocally assigned to a specific taxon were not deemed to be substantiated observations. Because Expedition biologists may not have been well versed in using animal tracks to identify the species that made them, tracks that Expedition biologists attributed to a specific species were almost never classified as substantiated observations.

Substantiated observations include: (a) a sighting when a biologist described specific morphological or behavioral features that can unambiguously be correlated with a specific mammal taxon; (b) a vocalization that could not be attributed to another mammal taxon (e.g., a coyote howl); (c) a sign/feature created by an animal that would very likely not be created by any other animal taxon (e.g., mole runs, gopher burrows, porcupine debarking of a tree, *Neotoma* nests, etc.); and (d) bat sightings that were generically attributed to the order Chiroptera because there is no way to determine if a biologist could accurately assign a bat sighting to a specific bat taxon based on the features of an animal in flight, but it was assumed they could reliably distinguish between a bat and a bird in flight.

An example of a substantiated observation involving a sighting in a Vernon Bailey special report is "A weasel seen in a large rock pile in Monache Meadows." In this case he specifically stated he saw a weasel, and only one weasel species is likely to occur in that area based on a NAF volume or substitute treatise.

Substantiated observations are included in the Mammal Report taxon summaries. A conservative approach was adopted when a decision was made on whether to classify an observation as a substantiated observation and therefore include that observation in the Mammal Report taxon summaries.

- An "unsubstantiated observation" refers to an observation, auditory noise, or feature of some type that is not sufficiently definitive enough to unambiguously correlate it with a specific mammal taxon in a particular geographic location, i.e., a sighting or auditory noise that could potentially be attributed to multiple taxa. An example of an unsubstantiated observation involving a putative *Neotoma desertorum* sighting in a Vernon Bailey special report is "Abundant all through the Alabamas [Alabama Hills] & up into the Sierras as high as I went". In this case, Bailey does not state the specific characteristics that led him to think he was noting a *Neotoma* in that area, and it is therefore somewhat questionable that was the taxon he was perceiving. A total of 540 records were classified as unsubstantiated observations.

  Special reports records that were assigned a record type = "unsubstantiated observation" are not incorporated into the Mammal Report taxon summaries. It is important to note, however, that a more liberal interpretation of these types of records could substantially increase the number of locations where a particular taxon may have been detected by Expedition biologists, and many of these instances likely were valid taxon observations.

- A "reported" record type refers to statements made by citizens in a local area suggesting a particular taxon occurred or formerly occurred in a specific area, but Expedition biologists did not have specimen collections or first-hand observations demonstrating that particular taxon actually occurred in an area.

  Information for records where the record type = "reported" were incorporated into Mammal Report to expand the number of taxa included in the mammal summaries and further document the taxon diversity of the mammal fauna in areas visited by Expedition biologists. The likely presence of these taxa in each of the areas where they were reported by the citizens is substantiated by corresponding geographic range distributions in Grinnell's 1913 *A Distributional List of the Mammals of California* document.

  The reported record types pertain to 14 taxa: California Grizzly, Northwestern Timber Wolf, Pacific Fisher, Sierra Nevada Wolverine, Pacific Mink, Pacific River Otter, Sierra Mountain Beaver, Sierra Nevada Flying Squirrel, Golden Beaver, Western White-tailed Jack Rabbit, Dwarf Elk, Southern Black-tailed Deer, Prong-horn Antelope, and Sierra Nevada Bighorn.

- An "extinct" record type pertains to a taxon that no longer occurred in a specific area in 1891 because of human-related causes.

- A "Cannot Assign" record type indicates an assignment when a biologist field catalog provided only marginal or no information that could be used to make a taxon assignment.

6. Geographic place names in the special reports were modified to adopt the standardized locality names described above.

7. Date ranges were assigned to each special report record.

   The dates that biologists stated in nearly all their special reports are provided as a date range, e.g., "between May 1 and 15", and not as a specific date, e.g., "May 6". The taxon-specific observations in the Mammal Report summary tables therefore provide a range of dates for a given observation record, and that information adopts a specific syntax. For example, a Mammal Report taxon table with an annotation of "OSTB Dec. 12 & 27, 1890" indicates that for that record, a mammal was observed some time between December 12 and December 27, 1890.

MAMMAL REPORT

The fieldwork associated with the Death Valley Expedition took place between November 3, 1890, and January 4, 1892. The range of dates when each Expedition biologist engaged in Expedition fieldwork, and the number of mammal specimens they collected, were as follows:

Biologist	Fieldwork Date Range	Number of Specimens Collected
Edward W. Nelson	Nov. 29, 1890 – Jan. 4, 1892	1,790
Vernon O. Bailey	Nov. 3, 1890 – Oct. 28, 1891	1,413
Albert K. Fisher	Dec. 28, 1890 – Sept. 17, 1891	1,000
Frank Stephens	Feb. 6, 1891 – Oct. 2, 1891	951
Theodore S. Palmer	Jan. 4, 1891 – Sept. 19, 1891	320
Basil H. Dutcher	June 17, 1891 – Sept. 6, 1891	205
Clinton Hart Merriam	Mar. 29, 1891 – June 30, 1891	0

The Expedition biologists collected a total of 5,659 mammal specimens. These pertained to:

- Six mammalian orders, i.e., Insectivora, Chiroptera, Carnivora, Rodentia, Lagomorpha, and Artiodactyla. Seals and sea lions in the order Pinnipedia also were observed.
- Seventeen families.
- Forty-three genera.
- One hundred seventy-nine species and subspecies.

The Expedition biologists also observed signs of, but did not collect, 11 additional mammal taxa. And they recorded reports of 14 other mammal taxa that were identified by citizens in specific areas, but the biologists did not personally collect or observe. In total, the Death Valley Expedition biologists therefore collected data pertaining to 204 mammal taxa.

Of the 5,659 mammal specimens collected during the Expedition, all but 160 were assigned a taxon name and included in the mammal taxon summaries provided below. The 160 records that were not assigned a taxon name lacked sufficient information to make those assignments, e.g., measurement data. Two additional mammal specimens were collected on an incidental basis. Therefore, 5,501 specimens were collected during the Expedition, assigned a historical taxonomic name, and included in the Mammal Report taxon summaries.

The mammal summaries also include 151 substantiated observations. Those observations are based on special reports developed by the Expedition biologists. Special reports are topical reports written by a particular biologist and for a particular geographic area and that summarize observations pertaining to specific bird and mammal taxa. Several hundred unsubstantiated mammal observations also were recorded by the biologists but are not included in the mammal summaries below. Many of these likely were, however, bonified observations pertaining to specific taxa.

The Expedition biologists collected the type specimens for 29 mammal taxa. As such, those specimens provide a more complete understanding of the species diversity in the areas where Expedition biologists worked, and they have prompted new research on the taxonomic relationships of species and subspecies within specific genera. These 29 mammal taxa are identified in the mammal appendix (Appendix V) with a bold font being applied to their modern-day taxonomic name.

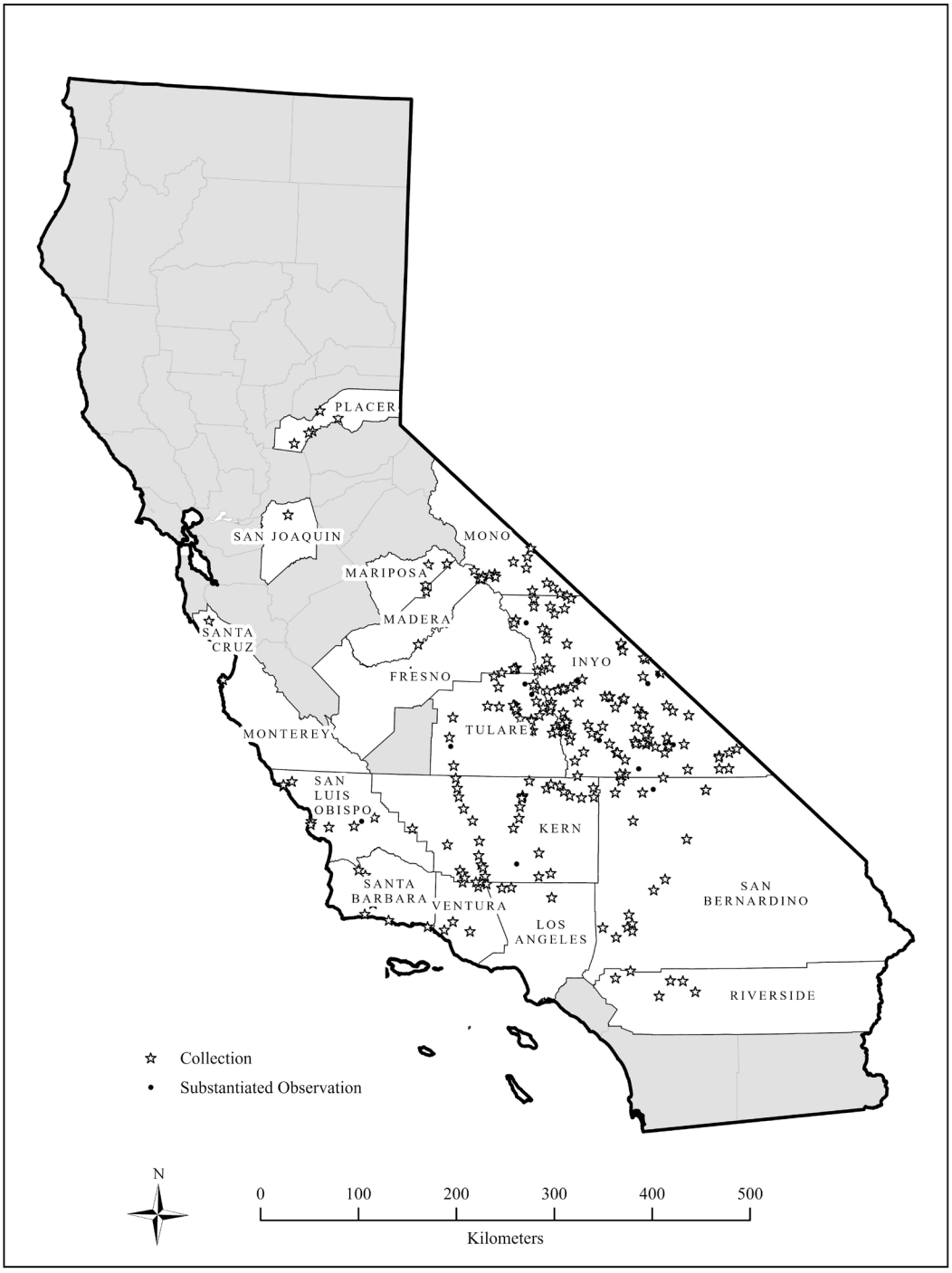
Many, if not most, of the specimens were collected at locations that had not previously been sampled by other field biologists, thereby substantially improving the understanding of the geographic distribution of the taxa collected.

Mammal specimen collections and substantiated observations were made at a total of 315 locations across California, Nevada, Utah, and Arizona (Maps 1 and 2). In spite of the Expedition's name, the geographic range associated with that expedition's collections and observations also included locations in the Great Basin Desert in southern and central Nevada, the coastal counties of central California, the southern one-third of the Sierra Nevada mountain range, and California's Central Valley. Fieldwork occurred at elevations as low as 160 feet below sea level at Greenland (i.e., Furnace Creek) Ranch and as high as 10,200 feet at Big Cottonwood Meadows, both of which are in Inyo County, California.

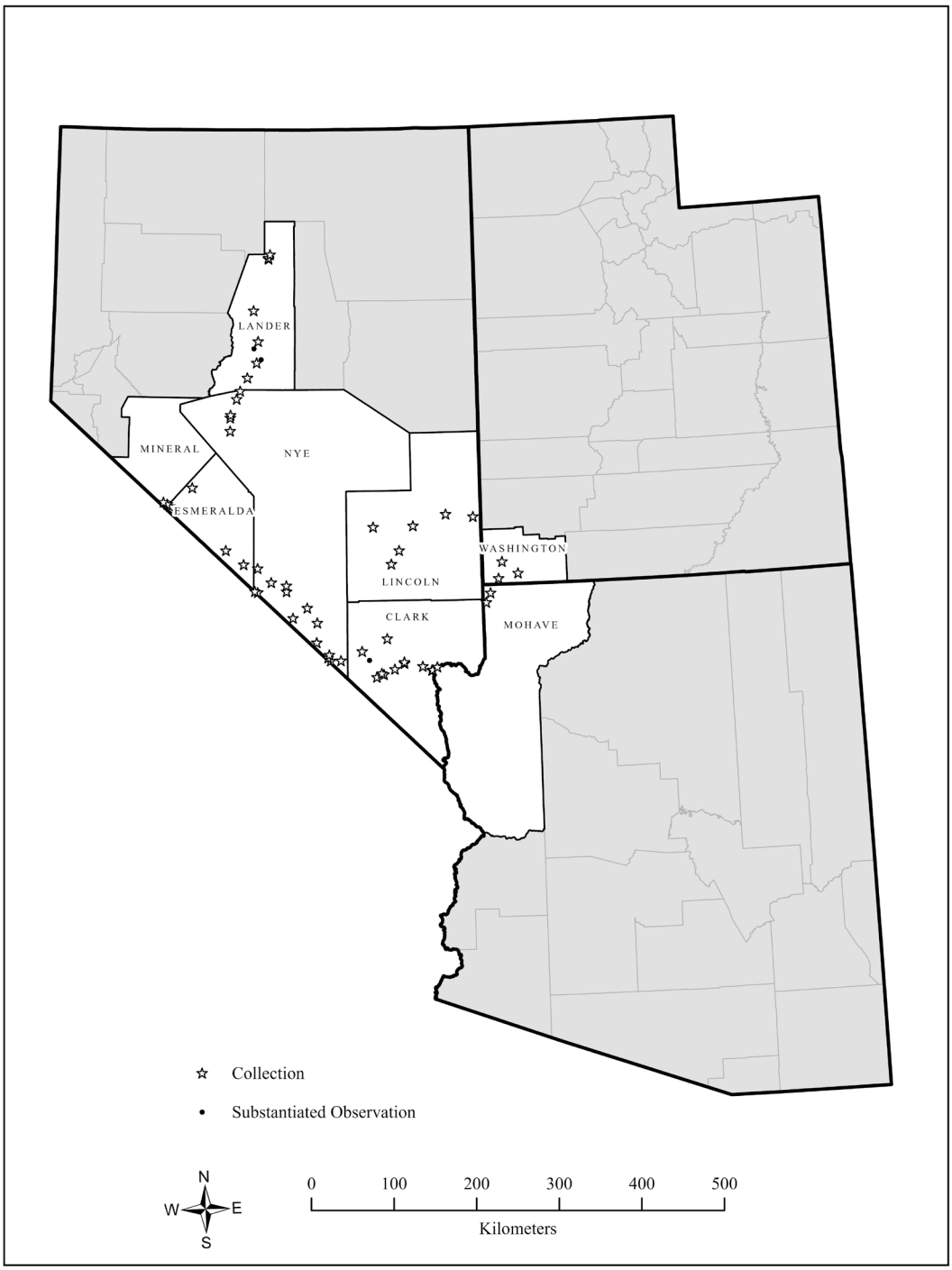
The methods used to produce the mammal summaries are described in the Methods section above, and the references relied upon are presented in the References section.

In the mammal summaries, two types of scientific names are provided for each taxon. The first name in bold font reflects a historical taxonomic name from a NAF publication or substitute taxonomic treatise from the late nineteenth or early twentieth century. The second taxonomic name in italics provides the corresponding NMNH taxon assignment appearing in the January 2023 version of the NMNH mammal website. When two or more NMNH Latin names are provided for a particular historical taxon name, the number of Expedition specimens pertaining to each NMNH taxon name are provided.

For example, the mammal summary for *Scapanus latimanus latimanus* is based on a historical taxonomic name in the NAF Number 38 *Review of the American Moles* document (Jackson 1915). That taxon cross refer-



Map 1. Locations where mammal collections or substantiated observations occurred in California during the Death Valley Expedition. Note that county names and boundaries reflect modern designations; these may vary from historic county names or boundaries at the time of the Expedition.



Map 2. Locations where mammal collections or substantiated observations occurred in Nevada, Arizona, and Utah during the Death Valley Expedition. Note that county names and boundaries reflect modern designations; these may vary from historic county names or boundaries at the time of the Expedition.

ences to the NMNH synonym of *Scapanus latimanus caurinus*. The absence of any numbers associated with the *caurinus* subspecies in the *Scapanus latimanus latimanus* summary indicates all of the specimens in that taxon's tabular summary (i.e., the one specimen) align with the NMNH taxon assignment. In the case of *Sorex ornatus ornatus* and its four records that reflect the historical nomenclature in the 1928 NAF Number 51 *A Taxonomic Review of the American Long-tailed Shrews* document (Jackson 1928), three of those specimens are currently classified by the NMNH as *Sorex ornatus ornatus*, and one is classified by the NMNH as *Sorex ornatus salarius*.

The order of the presentation of families and genera in the Mammal Report aligns with the sequence presented in the Miller (1912) *List of North American Land Mammals in the United States National Museum, 1911* document. The order in which species in a particular genus are presented aligns with the order presented in the applicable NAF or substitute taxonomic treatise; subspecies are presented in alphabetical order. The lack of a trinomial name in the mammal summaries indicates that subspecies for a particular species were not described in the applicable taxonomic literature.

All references to date ranges that lack a year correspond to the year 1891.

The order, family, and taxon names in the following checklist include the mammals the Expedition biologists collected or observed during their fieldwork. It also includes 14 taxa the Expedition members did not personally encounter, but that local residents told them occurred or had occurred in the areas where the biologists worked. Those taxa are: *Ursus horribilis californicus*, *Canis gigas*, *Martes pennanti pacifica*, *Gulo luscus luteus*, *Mustela vison energumenos*, *Lutra canadensis pacifica*, *Aplodontia rufa californica*, *Glaucomys sabrinus lascivus*, *Castor subauratus*, *Lepus campestris townsendi*, *Cervus nannodes*, *Odocoileus columbianus scaphiotus*, *Antilocapra americana*, and *Ovis canadensis sierrae*. For the purposes of the Mammal Report, these taxa are assigned a record type of "reported" when they likely still occurred in the area where the biologists worked in 1891, or a record type of "extinct" when residents suggested those taxa no longer persisted in particular areas that year.

CHECKLIST OF THE MAMMAL TAXA COLLECTED OR OBSERVED BY DEATH VALLEY EXPEDITION BIOLOGISTS

INSECTIVORA

TALPIDAE

Scapanus latimanus latimanus
Scapanus latimanus occultus

SORICIDAE

Sorex trowbridgii mariposae
Sorex trowbridgii montereyensis
Sorex vagrans amoenus
Sorex vagrans nevadensis
Sorex obscurus obscurus
Sorex ornatus ornatus
Sorex tenellus
Sorex palustris navigator

CHIROPTERA

VESPERTILIONIDAE

Antrozous pallidus
Antrozous pallidus pacificus
Myotis evotis
Myotis thysanodes

Corynorhinus macrotis pallescens
Myotis lucifugus longicrus
Myotis yumanensis
Myotis californicus
Pipistrellus hesperus
Vespertilio fuscus
Lasiurus borealis teliotis
Lasiurus cinereus

MOLOSSIDAE

Nyctinomus mohavensis

CARNIVORA

URSIDAE

Ursus horribilis californicus
Ursus americanus altifrontalis

CANIDAE

Canis gigas
Canis latrans estor
Canis latrans lestes
Canis latrans ochropus
Vulpes necator
Vulpes macrotis arsipus
Vulpes macrotis macrotis
Vulpes macrotis nevadensis
Urocyon cinereoargenteus californicus
Urocyon cinereoargenteus scotti
Urocyon cinereoargenteus townsendi

PROCYONIDAE

Bassariscus astutus raptor
Procyon psora psora

MUSTELIDAE

Martes caurina sierrae
Martes pennanti pacifica
Gulo luscus luteus
Putorius arizonensis
Putorius xanthogenys
Mustela vison energumenos
Spilogale gracilis
Spilogale phenax
Mephitis mephitis estor
Mephitis mephitis holzneri
Mephitis mephitis occidentalis
Taxidea taxus berlandieri
Taxidea taxus neglecta
Taxidea taxus taxus
Lutra canadensis pacifica

FELIDAE

Felis oregonensis oregonensis
Lynx rufus baileyi
Lynx rufus californicus
Lynx rufus pallescens

PINNIPEDIA

OTARIIDAE

Zalophus californianus

PHOCIDAE

Phoca richardii geronimensis

RODENTIA

MURIDAE

Onychomys leucogaster brevicaudus
Onychomys torridus clarus
Onychomys torridus pulcher
Onychomys torridus longicaudus
Onychomys torridus ramona
Onychomys torridus tularensis
Reithrodontomys megalotis longicaudus
Reithrodontomys megalotis megalotis
Peromyscus maniculatus gambeli
Peromyscus maniculatus sonoriensis
Peromyscus boylei
Peromyscus boylei rowleyi
Peromyscus truei
Peromyscus truei gilberti
Peromyscus crinitus
Peromyscus crinitus stephensi
Peromyscus californicus
Peromyscus eremicus
Peromyscus eremicus fraterculus
Neotoma intermedia
Neotoma intermedia gilva
Neotoma desertorum
Neotoma fuscipes annectens
Neotoma fuscipes macrotis
Neotoma fuscipes simplex
Neotoma fuscipes streatori
Neotoma cinerea
Neotoma lepida monstrabilis
Microtus montanus
Microtus montanus rivularis
Microtus dutcheri
Microtus nevadensis
Microtus californicus
Microtus californicus vallicola
Microtus scirpensis
Microtus mordax
Microtus curtatus
Epimys rattus
Mus musculus musculus

GEOMYIDAE

Thomomys townsendi nevadensis
Thomomys bottae bottae
Thomomys bottae mewa
Thomomys bottae pascalis
Thomomys alpinus alpinus
Thomomys alpinus awahnee
Thomomys perpallidus aureus
Thomomys perpallidus perpes
Thomomys operarius
Thomomys quadratus fisheri
Thomomys monticola monticola

HETEROMYIDAE

Perognathus panamintinus
Perognathus panamintinus bangsi
Perognathus nevadensis
Perognathus longimembris
Perognathus parvus magruderensis
Perognathus parvus olivaceus
Perognathus formosus
Dipodomys *panamintinus*
Dipodomys ordii columbianus
Dipodomys merriami merriami
Dipodomys merriami parvus
Dipodomys merriami simiolus
Dipodomys merriami vulcani
Dipodomys nitratoides exilis

Perognathus penicillatus
Perognathus penicillatus angustirostris
Perognathus stephensi
Perognathus fallax
Perognathus californicus dispar
Perognathus spinatus
Dipodomys heermanni swarthi
Dipodomys morroensis
Dipodomys mohavensis
Dipodomys leucogenys
Dipodomys nitratoides nitratoides
Dipodomys agilis agilis
Dipodomys agilis perplexus
Dipodomys microps
Dipodomys microps celsus
Dipodomys microps centralis
Dipodomys microps occidentalis
Dipodomys levipes
Dipodomys deserti
Microdipodops megachephalus megacephalus

ZAPODIDAE

Zapus trinotatus alleni

ERETHIZONTIDAE

Erethizon epixanthum epixanthum

APLODONTIDAE

Aplodontia rufa californica

SCIURIDAE

Marmota flaviventris parvula
Marmota flaviventris sierrae
Citellus townsendii mollis
Citellus beldingi beldingi
Citellus variegatus grammurus
Citellus beecheyi beecheyi
Citellus beecheyi fisheri
Citellus beecheyi parvulus
Citellus beecheyi sierrae
Citellus leucurus leucurus
Citellus nelsoni
Citellus mohavensis
Citellus tereticaudus chlorus
Citellus tereticaudus tereticaudus
Citellus lateralis chrysodeirus
Citellus lateralis trepidus
Eutamias alpinus
Eutamias amoenus monoensis
Eutamias panamintinus
Eutamias quadrivittatus frater
Eutamias minimus pictus
Eutamias quadrivittatus inyoensis
Eutamias quadrivittatus sequoiensis
Eutamias callipeplus
Eutamias townsendii senex
Eutamias palmeri
Eutamias quadrimaculatus
Eutamias merriami kernensis
Eutamias merriami merriami
Eutamias merriami pricei
Eutamias dorsalis utahensis
Sciurus douglasi albolimbatus
Sciurus griseus anthonyi
Sciurus griseus griseus
Sciurus griseus nigripes

PETAURISTIDAE

Glaucomys sabrinus lascivus

CASTORIDAE

Castor canadensis frondator
Castor subauratus

LAGOMORPHA

OCHOTONIDAE

Ochotona schisticeps

LEPORIDAE

Lepus campestris sierrae
Lepus campestris townsendi
Lepus californicus
Lepus californicus deserticola
Lepus californicus richardsoni
Sylvilagus nuttalli grangeri
Sylvilagus auduboni arizonae
Sylvilagus auduboni sanctidiegi
Sylvilagus auduboni vallicola
Sylvilagus bachmani
Sylvilagus bachmani cinerascens
Sylvilagus bachmani ubericolor

ARTIODACTYLA

CERVIDAE

Cervus nannodes
Odocoileus columbianus scaphiotus
Odocoileus hemionus californicus
Odocoileus hemionus hemionus

ANTILOCAPRIDAE

Antilocapra americana americana

BOVIDAE

Ovis canadensis nelsoni
Ovis canadensis sierrae

In the taxa tables below, the Biologist# field refers to the biologist-specific field catalog number each biologist assigned to a specimen they collected and is reflected in their field catalog.

In the “Sex, Age” column, “ad” refers to an adult specimen, “juv” refers to a juvenile, and “imm” refers to an immature individual.

In keeping with the historical format of the North American Fauna series, NMNH catalog numbers are not provided in this publication for the mammal specimens collected by the Expedition biologists. These catalog numbers, however, are available via the NMNH mammal collections website (https://collections.nmnh.si.edu/search/mammals/) by searching for the taxon of interest and the year 1891 in the website's “year collected” field. To further narrow down the resulting lists, the user can optionally conduct individual searches by state (California, Arizona, etc.) and/or by the collector name (Bailey, etc.). Finally, the search results can then be downloaded and sorted by the “Other Numbers (type: Value)" field, which lists the biologist field numbers for each specimen, to view the corresponding NMNH catalog number for each specimen.

In the case of records with a substantiated observation, the Remarks field provides a date range indicating when that observation was made. For example, a notation of “OSTB July 17–20” indicates an observation some time between July 17 and July 20.

To aid the reader in identifying the localities listed in the tables of specimens collected, Appendix VI provides an alphabetical list of all locality names and the county and state of each locality.

ORDER INSECTIVORA

FAMILY TALPIDAE

The holes or runs of an unidentified mole taxon, probably belonging to some subspecies of *Scapanus latimanus*, were observed at three locations. In December 1890, Mr. Bailey noted such holes in Lone Pine Cañon. No mole specimens were obtained at that location. That location is on the boundary of the geographic range of *Scapanus latimanus occultus* and *Scapanus latimanus grinnelli*. Mr. Nelson repeatedly saw mole runs at the "head of Owens River" at 8,400 feet in July and/or August; when he made references to this area, he was actually referring to the area near Mammoth, California. He also saw mole runs on all the streams on the west slope of the Sierra Nevada range between 3,000 and 8,000 feet sometime in July and/or August.

Scapanus latimanus latimanus
Scapanus latimanus caurinus

On October 13, Mr. Bailey collected a male California Mole at Boulder Creek in Santa Cruz County.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3398	Boulder Creek	Oct. 13, 1891	♂	

Scapanus latimanus occultus
Scapanus latimanus grinnelli

Two female specimens of Southern California Mole were collected by Mr. Stephens at the town of Olancha.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	622	Olancha	June 12, 1891	♀	
Stephens	465	Olancha	May 17, 1891	♀	

Scapanus latimanus occultus
Scapanus latimanus occultus

Mr. Bailey observed many mole ridges that were probably associated with this taxon near Bakersfield sometime in mid-July, and he noted similar ridges at Dick's Ranch on Kern River in August or September. In November and/or December, Mr. Nelson observed mole runs occasionally in the hills from Tejon Pass all the way to Carpinteria, but they were not numerous anywhere. They ranged from sea level to the mountain summits. At Monache Meadows, Mr. Stephens thought a few mole runs were seen in late May; they would most likely have been associated with this mole subspecies.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey		Bakersfield			OSTB July 17 – 20, 1891

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson		Carpinteria			OSTB Nov. 4 & Dec. 18, 1891
Bailey		Dick's Ranch			OSTB Aug. 1 & Sept. 30, 1891
Stephens		Monache Meadows			OSTB May 24 & 27, 1891
Nelson		Tejon Pass			OSTB Nov. 4 & Dec. 18, 1891

FAMILY SORICIDAE

Sorex trowbridgii mariposae
Sorex trowbridgii mariposae

In spite of its name, Death Valley Expedition members found the Yosemite Shrew's distribution was more broad than its name suggests. Bailey collected two individuals on the south side of the Middle Fork of the American River three miles from the town of Auburn. And he collected a female belonging to that taxon at Michigan Bluff, a town 20 miles northeast of Auburn in the foothills of the Sierra Nevada. He also collected one female on the East Fork of the Kaweah River somewhere between the town of Three Rivers and Mineral King. In August, Mr. Fisher collected four specimens of *Sorex trowbridgii mariposae* at Halstead Meadows, which is located in Sequoia National Park.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3443	American River, Middle Fork, 3 miles from Auburn	Oct. 23, 1891	♀	
Bailey	3442	American River, Middle Fork, 3 miles from Auburn	Oct. 23, 1891	♂	
Fisher	892	Halsted Meadows	Aug. 9, 1891		
Fisher	890	Halsted Meadows	Aug. 9, 1891		
Fisher	889	Halsted Meadows	Aug. 8, 1891		
Fisher	881	Halsted Meadows	Aug. 7, 1891	♀	
Bailey	3116	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀	
Bailey	3464	Michigan Bluff	Oct. 28, 1891	♀	

Sorex trowbridgii montereyensis
Sorex trowbridgii montereyensis

The occurrence of the Monterey Shrew was documented in three counties along the California coast. Mr. Bailey collected four of these animals at Boulder Creek in Santa Cruz County in October, and they were found to be common there under logs and brush through the woods. He collected five specimens of that taxon in Monterey, Monterey County, where they were common under thick brush and old logs in the lowest places in woods where moisture was on the ground. In San Luis Obispo County, two were caught at Morro in grassy places near the edge of the salt marshes, and one individual was caught ~ 12 miles west of the town of San Luis Obispo on the edge of a creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3420	Boulder Creek	Oct. 15, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3408	Boulder Creek	Oct. 14, 1891	♂	
Bailey	3407	Boulder Creek	Oct. 14, 1891	♂	
Bailey	3397	Boulder Creek	Oct. 13, 1891	♂	
Bailey	3372	Monterey	Oct. 6, 1891	♀	
Bailey	3337	Monterey	Oct. 1, 1891	♀	
Bailey	3336	Monterey	Oct. 1, 1891	♂	
Bailey	3334	Monterey	Sept. 30, 1891	♂	
Bailey	3333	Monterey	Sept. 30, 1891	♂	
Nelson	1468	Morro	Nov. 11, 1891	♂	
Nelson	1438	Morro	Nov. 7, 1891	♂	
Nelson	1542	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	

Sorex vagrans amoenus
Sorex vagrans vagrans

Only two Sierra Shrews were captured during the Death Valley Expedition. On July 22, Mr. Nelson caught one female and one male near the town of Mammoth on the east slope of the Sierra Nevada.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1130	Mammoth	July 22, 1891	♀	
Nelson	1129	Mammoth	July 22, 1891	♂	

Sorex vagrans nevadensis
Sorex vagrans vagrans

The Nevada Shrew was collected by Bailey at two locations in late November 1890 during extremely cold weather. A single male was caught near the head of Cloverdale Creek 12 miles from Cloverdale. Three males and an individual of unidentified sex were captured along the brush-covered banks of Reese River near the Lander–Nye County line.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2222	Cloverdale Creek, 3 miles below the divide	Nov. 30, 1890	♂	
Bailey	2192	Reese River, Lander–Nye County line	Nov. 24, 1890	♂	
Bailey	2185	Reese River, Lander–Nye County line	Nov. 22, 1890		
Bailey	2184	Reese River, Lander–Nye County line	Nov. 22, 1890	♂	
Bailey	2150	Reese River, Lander–Nye County line	Nov. 20, 1890	♂	

Sorex obscurus obscurus
Sorex monticola obscurus

The relatively small Dusky Shrew was captured at several locations by many of the Death Valley Expedition biologists. Mr. Dutcher captured five specimens during his collateral duty of maintaining a weather station at Big Cottonwood Meadows in the Sierra at an elevation of ~ 10,200 feet. Frank Stephens captured five individuals on Bishop Creek in August. At that location, they seemed to not be rare, though no more than a pair appeared to inhabit the same immediate neighborhood. Mr. Fisher captured a total of seven individuals at Halstead or Horse Corral meadows in Sequoia National Park. Vernon Bailey captured nine of these shrews along the East Fork of the Kaweah River at points at or near Mineral King, or between Three Rivers and Mineral King. They were common along that river and in wet places up to 9,800 feet, where several were taken among *Pinus monticola* and *Pinus balfouriana*. Bailey also caught three individuals on the river flats at Pruit's Ranch on the Kern River where they were caught under brush and weeds on damp ground near the river. Mr. Stephens collected four of these shrews by placing traps in *Microtus* runs in a wet meadow at the head of the San Joaquin River. Single specimens were collected at Big Whitney Meadows, Dick's Ranch, Mulkey Meadows, Pine City near Mammoth, Rock Creek, and Round Valley.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	121	Big Cottonwood Meadows	July 21, 1891	♀	
Dutcher	130	Big Cottonwood Meadows	July 22, 1891	♀	
Dutcher	68	Big Cottonwood Meadows	July 10, 1891	♀	
Dutcher	138	Big Cottonwood Meadows	July 23, 1891	♀	
Dutcher	140	Big Cottonwood Meadows	July 24, 1891	♂	
Bailey	3228	Big Whitney Meadows	Aug. 21, 1891	♂	
Stephens	822	Bishop Creek	Aug. 10, 1891	♀	
Stephens	812	Bishop Creek	Aug. 9, 1891	♀	
Stephens	811	Bishop Creek	Aug. 9, 1891	♀	
Stephens	803	Bishop Creek	Aug. 5, 1891	♂	
Stephens	802	Bishop Creek	Aug. 5, 1891	♀	
Bailey	3206	Dick's Ranch	Aug. 15, 1891	♀	
Fisher	854	Halsted Meadows	Aug. 5, 1891	♂	
Fisher	891	Halsted Meadows	Aug. 9, 1891		
Fisher	867	Halsted Meadows	Aug. 6, 1891	♂	
Fisher	875	Halsted Meadows	Aug. 7, 1891		
Fisher	913	Horse Corral Meadows	Aug. 12, 1891	♂	
Fisher	917	Horse Corral Meadows	Aug. 13, 1891	♂	
Fisher	906	Horse Corral Meadows	Aug. 11, 1891	♂, ad	
Bailey	3195	Kaweah River, East Fork, Mineral King	Aug. 10, 1891	♂	
Bailey	3146	Kaweah River, East Fork, Mineral King	Aug. 1, 1891	♂, ad	
Bailey	3174	Kaweah River, East Fork, Mineral King	Aug. 5, 1891	♂	
Bailey	3175	Kaweah River, East Fork, Mineral King	Aug. 5, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3132	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♂	
Bailey	3133	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♀	
Bailey	3139	Mineral King	July 31, 1891	♂	
Bailey	3255	Mineral King, 2 miles south of	Sept. 11, 1891	♀	
Bailey	3253	Mineral King, 2 miles south of	Sept. 10, 1891	♀	
Stephens	857	Mulkey Meadows	Aug. 27, 1891	♀	
Stephens	791	Pine City	July 30, 1891	♂	
Bailey	2990	Pruit's Ranch	July 5, 1891	♂	
Bailey	3010	Pruit's Ranch	July 7, 1891	♀	
Bailey	3009	Pruit's Ranch	July 7, 1891	♂	
Stephens	862	Rock Creek	Aug. 30, 1891	♂	
Fisher	930	Round Valley	Aug. 28, 1891	♂	
Stephens	788	San Joaquin River, near head	July 29, 1891	♀	
Stephens	787	San Joaquin River, near head	July 29, 1891	♂	
Stephens	786	San Joaquin River, near head	July 29, 1891	♂	
Stephens	782	San Joaquin River, near head	July 28, 1891	♀	

Sorex ornatus ornatus
Sorex ornatus ornatus (3), *S. ornatus salarius* (1)

One Southern California Long-tailed Shrew was collected by Mr. Bailey at a grassy spring on the beach in Monterey. Nelson found this taxon at the head of San Emigdio Creek and on the top of Mount Piños (McGill Peak). Those specimens were caught in *Microtus* runs in dense grass growing on boggy places. He also collected one individual in a *Microtus* run under a brush pile along the Ventura River.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3335	Monterey	Sept. 30, 1891	♂	
Nelson	1335	Mount Piños	Oct. 20, 1891	♀	
Nelson	1328	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1685	Ventura River, near to	Dec. 21, 1891	♀	

Sorex tenellus
Sorex tenellus

The Owens Valley Dwarf Shrew was collected at two locations. Mr. Nelson caught one at 4,950 feet among loose rocks at the upper edge of the Alabama Hills near Lone Pine. It was a long way from water or brush on a dry side hill. He also caught two in the White Mountains at an elevation of 9,850 feet at the head of a creek that flows into Deep Spring Valley. The collection of *Sorex tenellus* in the White Mountains deviates from text in Jackson (1928), which suggests that taxon was only known to occur along Lone Pine Creek at the upper edge of Alabama Hills.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	131	Alabama Hills	Dec. 22, 1890		
Nelson	1101	White Mountains, summit	July 13, 1891	♀	
Nelson	1096	White Mountains, summit	July 12, 1891	♂	

Sorex palustris navigator
Sorex palustris navigator

The Mountain Water Shrew was captured by Death Valley Expedition biologists at several locations. Mr. Bailey caught four along Lone Pine Creek as it flowed through the Alabama Hills between 3,850 and 6,000 feet. Those specimens were captured along the edge of the creek under brush. Mr. Dutcher caught nine in July at Big Cottonwood Meadows high in the Sierra Nevada. Messrs. Palmer and Fisher caught a total of three individuals at a relatively high elevation at Halstead Meadows, and Bailey caught three at Big Whitney Meadows. Frank Stephens caught two along Independence Creek, and Mr. Nelson caught one in the lower portion of the Sierra Nevada near Lone Pine.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2272	Alabama Hills	Dec. 17, 1890	♂	
Bailey	2273	Alabama Hills	Dec. 17, 1890	♀	
Bailey	2274	Alabama Hills	Dec. 17, 1890	♀	
Bailey	2287	Alabama Hills	Dec. 18, 1890	♀	
Dutcher	111	Big Cottonwood Meadows	July 19, 1891	♂	
Dutcher	57	Big Cottonwood Meadows	July 8, 1891	♂	
Dutcher	127	Big Cottonwood Meadows	July 22, 1891	♀	
Dutcher	128	Big Cottonwood Meadows	July 22, 1891		
Dutcher	129	Big Cottonwood Meadows	July 22, 1891		
Dutcher	139	Big Cottonwood Meadows	July 23, 1891	♂	
Dutcher	141	Big Cottonwood Meadows	July 24, 1891	♂	
Dutcher	142	Big Cottonwood Meadows	July 25, 1891	♂	
Dutcher	143	Big Cottonwood Meadows	July 25, 1891		
Bailey	3233	Big Whitney Meadows	Aug. 22, 1891	♂	
Bailey	3223	Big Whitney Meadows	Aug. 21, 1891		
Bailey	3214	Big Whitney Meadows	Aug. 20, 1891	♀	
Palmer	312	Halsted Meadows	Aug. 7, 1891	♀	
Fisher	873	Halsted Meadows	Aug. 7, 1891	♂	
Fisher	893	Halsted Meadows	Aug. 9, 1891		
Stephens	629	Independence Creek	June 19, 1891	♀	
Stephens	635	Independence Creek	June 21, 1891	♀	
Nelson	142	Sierra Nevada, near Lone Pine	Dec. 22, 1890		

ORDER CHIROPTERA

Unless a biologist is proficient in identifying bats in flight, their species identifications can sometimes be in error. The text and table that immediately follows therefore provides an accounting of locations where Death Valley Expedition members observed bats in flight, but where they did not obtain a specimen that could be used to make a definitive taxon assignment. It is noted, however, that their field catalogs or special reports did sometimes assign some degree of taxonomic specificity to some of their observations.

In the state of Nevada, flying bats were noted at the following locations: Corn Creek at the north end of the Las Vegas Valley, Oasis Valley, and Pahrump Valley.

The remaining records in the table below represent the observations of flying bats at several locations in California. Those animals were observed at elevations that occurred as low as 190 feet below sea level at Greenland (i.e., Furnace Creek) Ranch in the bottom of Death Valley, and as high as 10,600 feet at Farewell Gap in the Sierra Nevada mountains. Those records also represent locations as far north as the town of Benton in Mono County, and as far south as Palm Springs in Riverside County.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens		Benton			OSTB July 9 & 10, 1891
Stephens		Borax Flat Borax Works			OSTB April 28 & 30, 1891
Nelson		Boundary Spring			OSTB May 4 & June 15, 1891
Bailey		Corn Creek			OSTB March 7 & 16, 1891
Palmer		Coso			OSTB May 17 & 29, 1891
Bailey		Farewell Gap			OSTB July 26 & Aug. 10, 1891
Palmer		Greenland Ranch			OSTB Jan. 24 & Feb. 3, 1891
Stephens		Haiwee Meadows			OSTB May 12 & 14, 1891
Stephens		Haiwee Meadows			OSTB May 12 & 14, 1891
Bailey		Hot Springs, Panamint Valley			OSTB Jan. 3 & 18, 1891
Stephens		Little Lake			OSTB May 6 & 11, 1891
Palmer		Maturango Spring			OSTB May 7 & 28, 1891
Nelson		Mill Creek, Panamint Valley			OSTB May 4 & June 15, 1891
Stephens		Oasis Valley			OSTB March 15 & 19, 1891
Stephens		Olancha			OSTB May 16 & 23, 1891
Bailey		Pahrump Valley			OSTB March 7 & 16, 1891
Stephens		Palm Springs			OSTB Sept. 26 & Oct. 2, 1891
Fisher		Resting Springs			OSTB Jan. 20 – Feb. 7, 1891
Nelson		Salt Wells (Mesquite Valley)			OSTB May 4 & June 15, 1891
Stephens		Salt Wells Valley (Indian Wells Valley)			OSTB May 1 & 5, 1891
Nelson		San Joaquin River, near head			OSTB July 21 & Aug. 21, 1891

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey		Walker Basin			OSTB July 13 & 16, 1891
Nelson		Willow Creek, Panamint Mountains			OSTB May 4 & June 15, 1891

FAMILY VESPERTILIONIDAE

Antrozous pallidus
Antrozous pallidus pallidus

The Desert Pallid Bat was collected by Bailey in Nevada at Thorpe Mill in Nye County and in the Timpahute Mountains in Lincoln County.

The remaining Desert Pallid Bat collections noted in the table below occurred in California. Mr. Nelson collected a specimen at the Hot Springs on the floor of Panamint Valley. Mr. Fisher collected this taxon in Owens Valley at Lone Pine and 12 miles south of Owens Lake, and two specimens were obtained in July at Walker Basin.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	810	Hot Springs, Panamint Valley	Apr. 21, 1891	♀	
Fisher	919	Lone Pine	Aug. 22, 1891	♂	
Fisher	706	Owens Lake, 12 miles south of lake	June 29, 1891	♀	
Bailey	2880	Thorpe Mill	June 2, 1891	♀	
Bailey	2870	Timpahute Mountains	May 26, 1891	♀, ad	
Bailey	2869	Timpahute Mountains	May 26, 1891	♀, ad	
Fisher	770	Walker Basin	July 13, 1891	♀	
Bailey	3044	Walker Basin	July 13, 1891	♀	

Antrozous pallidus pacificus
Antrozous pallidus pacificus

The Pacific Pallid Bat was collected by Death Valley Expedition members only at the site of the abandoned Fort Tejon. In June, Palmer collected three specimens there, and he thought the taxon seemed to pass the day in hollows in large oaks about the fort.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	208	Fort Tejon	June 28, 1891	♀	
Palmer	207	Fort Tejon	June 28, 1891	♀	
Palmer	206	Fort Tejon	June 28, 1891	♂	

Corynorhinus macrotis pallescens
Corynorhinus townsendii pallescens

A single Pale Lump-nosed Bat was collected by Mr. Stephens at Olancha on May 18. He noted it had excessively large ears. After it flew out of a horse stable in the forenoon, it lit on an apple tree and he caught it there. No more were seen there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	479	Olancha	May 18, 1891	♀	

Myotis lucifugus longicrus
Myotis lucifugus relictus

Three male and three female Long-legged Bats were collected by Mr. Fisher and Mr. Bailey on the east shore of Owens Lake at Keeler on June 27. At that time, that lake was approximately 16 miles long, north to south, and 10 miles wide, east to west.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	705	Keeler	June 27, 1891	♀	
Fisher	704	Keeler	June 27, 1891	♂	
Bailey	2970	Keeler	June 27, 1891	♀	
Bailey	2969	Keeler	June 27, 1891	♀	
Bailey	2968	Keeler	June 27, 1891	♂	
Bailey	2967	Keeler	June 27, 1891	♂	

Myotis yumanensis
Myotis yumanensis yumanensis (7), *M. yumanensis sociabilis* (51), *M. yumanensis saturatus* (1)

The Yuma Bat was collected in three areas by Expedition biologists. In Owens Valley, two specimens were collected at each of the Alabama Hills, Ash Creek, and Olancha. At Elk Bayou, Mr. Bailey collected 44 specimens by using a hooked wire to extract specimens from under a bridge. For the sake of brevity, only four of those 44 specimens are presented in the table below. Mr. Dutcher collected one at Big Cottonwood Meadows that was not included in his field catalog. Mr. Palmer collected eight at old Fort Tejon.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2952	Alabama Hills	June 12, 1891	♀	
Bailey	2951	Alabama Hills	June 12, 1891	♀	
Stephens	563	Ash Creek	June 1, 1891	♀	
Stephens	564	Ash Creek	June 1, 1891	♀	
Dutcher	--	Big Cottonwood Meadows	June 21, 1891		not in catalog
Bailey	3102	Elk Bayou	July 22, 1891	♀	
Bailey	3096	Elk Bayou	July 22, 1891	♀	
Bailey	3097	Elk Bayou	July 22, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3098	Elk Bayou	July 22, 1891	♀	
Palmer	226	Fort Tejon	July 5, 1891	♀	
Palmer	245	Fort Tejon	July 5, 1891	♀	
Palmer	231	Fort Tejon	July 5, 1891	♀	
Palmer	232	Fort Tejon	July 5, 1891	♀	
Palmer	236	Fort Tejon	July 5, 1891	♀	
Palmer	237	Fort Tejon	July 5, 1891	♀	
Palmer	239	Fort Tejon	July 5, 1891	♀	
Palmer	247	Fort Tejon	July 5, 1891	♀	
Stephens	620	Olancha	June 11, 1891	♀	
Stephens	624	Olancha	June 13, 1891	♀	

Myotis californicus

Myotis californicus californicus (8), *M. californicus stephensi* (20), *M. melanorhinus* (3), *M. thysanodes thysanodes* (1), *M. volans interior* (3), *Parastrellus hesperus* (1)

Specimens of the Little California Bat were collected at six locations in Nevada. Mr. Bailey collected a single specimen at Callville, the abandoned Mormon settlement on the north bank of the Colorado River. Mr. Nelson collected another specimen at a non-specific location on that same river. One specimen was collected in the Las Vegas Valley, two at Gold Mountain, one was collected in the Pahrump Valley at the Pahrump Ranch, and two were collected at Sheep Spring east of Panaca.

In California, *M. californicus californicus* specimens were collected at Bennett Wells, Furnace Creek, and Saratoga Springs in Death Valley. Others were collected at Bishop, Fort Tejon, eight miles west of Tejon Pass, on the Kaweah River, at Medbury Spring, Mesquite Spring in the Funeral Mountains, Pruit's Ranch, San Emigdio, and the west slope of Walker Pass.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2632	Bennett Wells	Apr. 4, 1891	♀	
Stephens	666	Bishop	June 30, 1891	♀	
Bailey	2725	Callville	May 4, 1891	♂	
Nelson	631	Colorado River	Mar. 11, 1891	♂	
Palmer	209	Fort Tejon	June 28, 1891	♂, imm	
Fisher	135	Furnace Creek	Feb. 3, 1891	♂	
Fisher	128	Furnace Creek	Feb. 2, 1891	♀	
Fisher	136	Furnace Creek	Feb. 3, 1891	♂	
Nelson	686	Furnace Creek	Mar. 22, 1891	♂	
Nelson	685	Furnace Creek	Mar. 22, 1891	♂	
Palmer	41	Furnace Creek	Jan. 29, 1891	♂	
Nelson	688	Furnace Creek	Mar. 22, 1891	♂	
Nelson	687	Furnace Creek	Mar. 22, 1891	♂	
Bailey	2882	Gold Mountain	June 3, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2881	Gold Mountain	June 3, 1891	♂	
Bailey	3119	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀	
Bailey	3118	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀	
Bailey	3120	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀	
Bailey	3121	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♂	
Nelson	655	Las Vegas Valley	Mar. 13, 1891	♀	
Bailey	2534	Medbury Spring	Feb. 27, 1891	♂	
Bailey	2489	Mesquite Spring (Funeral Mountains)	Feb. 15, 1891	♂	
Bailey	2544	Pahrump Valley	Mar. 4, 1891	♀	
Bailey	2811	Sheep Spring	May 18, 1891	♂	
Bailey	2810	Sheep Spring	May 18, 1891	♂	
Fisher	724	Pruit's Ranch	July 3, 1891	♀	
Nelson	1348	San Emigdio	Oct. 21, 1891	♀	
Nelson	367	Saratoga Springs	Feb. 2, 1891	♂	
Bailey	2440	Saratoga Springs	Feb. 2, 1891	♂	
Nelson	389	Saratoga Springs	Feb. 6, 1891	♂	
Nelson	388	Saratoga Springs	Feb. 6, 1891	♂	
Nelson	376	Saratoga Springs	Feb. 5, 1891	♂	
Nelson	375	Saratoga Springs	Feb. 5, 1891	♂	
Nelson	368	Saratoga Springs	Feb. 2, 1891	♂	
Nelson	1307	Tejon Pass, 8 miles west of	Oct. 15, 1891	♂	
Bailey	2984	Walker Pass, west slope	July 2, 1891	♀	

Myotis evotis

Myotis evotis evotis

One Long-eared Bat was collected in Nevada in the Pahranagat Valley on May 24 by Mr. Bailey.

In California, a single specimen taken at the extreme head of the San Joaquin River at an elevation of ~ 9,900 feet. A dead specimen was found clinging to a rock in Long John Cañon in the Inyo Mountains near a spring that is 1,900 feet above the town of Lone Pine. And one specimen was collected by Mr. Stephens in Olancha on June 14.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	986	Inyo Mountains, near Lone Pine	June 25, 1891	♂	
Stephens	628	Olancha	June 14, 1891	♀	
Bailey	2855	Pahranagat Valley	May 24, 1891	♀	
Nelson	1186	San Joaquin River, near head	July 30, 1891	♂	

Myotis thysanodes
Myotis thysanodes thysanodes

The Fringed Bat was collected at two locations. One was shot on the west side of Walker Pass at 4,400 feet on July 2. Other flying bats of the same size were observed to be common at that location, and were probably the same species. Thirteen specimens were collected at Fort Tejon on July 5 while Mr. Palmer camped there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	246	Fort Tejon	July 5, 1891	♀	
Palmer	244	Fort Tejon	July 5, 1891	♀	
Palmer	243	Fort Tejon	July 5, 1891	♀	
Palmer	241	Fort Tejon	July 5, 1891	♀	
Palmer	240	Fort Tejon	July 5, 1891	♀	
Palmer	238	Fort Tejon	July 5, 1891	♀	
Palmer	235	Fort Tejon	July 5, 1891	♀	
Palmer	234	Fort Tejon	July 5, 1891	♀	
Palmer	233	Fort Tejon	July 5, 1891	♀	
Palmer	230	Fort Tejon	July 5, 1891	♂	
Palmer	229	Fort Tejon	July 5, 1891	♂	
Palmer	228	Fort Tejon	July 5, 1891	♀	
Palmer	227	Fort Tejon	July 5, 1891	♂	
Bailey	2983	Walker Pass, west slope	July 2, 1891	♂	

Pipistrellus hesperus
Parastrellus hesperus hesperus

One Canyon Bat or pipistrel was collected at the small town of Beaver Dam in Arizona on May 9 by Mr. Bailey.

In Utah, he collected one specimen in the town of Saint George on May 12, and he collected a second individual there on May 14.

In Nevada, an individual associated with this taxon was collected in Pahranagat Valley on May 23, one was collected at Gold Mountain on June 3, and one was taken at Cottonwood Springs on the southwestern edge of the Las Vegas Valley.

Canyon Bats were collected at a wide array of locations in California as outlined in the table below. *Parastrellus hesperus* were thought to be abundant in Saline Valley, Searles' Garden in the Argus Mountains, Cottonwood Cañon, Yosemite Valley, and Hot Springs Valley. One was collected at Grapevine Spring by Mr. Stephens but it was not included in his field catalog. They were found to be very abundant at Palm Springs. They were also numerous at Pruit's Ranch on the South Fork of the Kern River. The presence of Expedition biologists at San Emigdio in late October may have been too late in the season to fully assess the abundance and diversity of the bat fauna there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2757	Beaver Dam	May 9, 1891	♀	
Stephens	319	Borax Flat Water Station	Apr. 22, 1891	♂	
Stephens	313	Borax Flat, near pass to Panamint Valley	Apr. 21, 1891	♂	
Stephens	312	Borax Flat, near pass to Panamint Valley	Apr. 21, 1891	♀	
Nelson	924	Cottonwood Cañon, Panamint Mountains	May 29, 1891	♀	
Bailey	2706	Cottonwood Springs, Las Vegas Valley	Apr. 30, 1891	♀	
Nelson	690	Furnace Creek	Mar. 22, 1891	♀	
Bailey	2961	Furnace Creek	June 20, 1891	♀	
Nelson	689	Furnace Creek	Mar. 22, 1891	♀	
Bailey	2643	Furnace Creek	Apr. 9, 1891	♀	
Bailey	2883	Gold Mountain	June 3, 1891	♀	
Stephens	--	Grapevine Spring	Apr. 2, 1891		not in catalog
Stephens	410	Hot Springs Valley	May 7, 1891	♀	
Stephens	409	Hot Springs Valley	May 7, 1891	♀	
Fisher	566	Hot Springs, Panamint Valley	Apr. 22, 1891	♂	
Fisher	565	Hot Springs, Panamint Valley	Apr. 22, 1891	♂	
Nelson	812	Hot Springs, Panamint Valley	Apr. 23, 1891	♀	
Nelson	807	Hot Springs, Panamint Valley	Apr. 20, 1891	♂	
Nelson	809	Hot Springs, Panamint Valley	Apr. 21, 1891	♂	
Nelson	811	Hot Springs, Panamint Valley	Apr. 21, 1891	♂	
Bailey	2949	Independence	June 10, 1891	♀	
Fisher	703	Keeler	June 27, 1891	♂	
Fisher	767	Kernville	July 11, 1891	♀	
Fisher	670	Lone Pine	June 8, 1891	♂	
Fisher	682	Lone Pine	June 9, 1891	♀	
Fisher	683	Lone Pine	June 10, 1891	♀	
Stephens	623	Olancha	June 13, 1891	♀	
Bailey	2844	Pahranagat Valley	May 23, 1891	♀	
Stephens	931	Palm Springs	Sept. 28, 1891	♂	
Stephens	932	Palm Springs	Sept. 28, 1891	♀	
Stephens	933	Palm Springs	Sept. 28, 1891	♀	
Bailey	3030	Pruit's Ranch	July 8, 1891	♀	
Bailey	2989	Pruit's Ranch	July 4, 1891	♀	
Bailey	3022	Pruit's Ranch	July 7, 1891	♀	
Fisher	437	Pyramid Peak, near to	Mar. 21, 1891	♂	
Bailey	2783	Saint George	May 14, 1891	♀	
Bailey	2773	Saint George	May 12, 1891	♀	
Nelson	1020	Saline Valley	June 30, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1360	San Emigdio	Oct. 23, 1891	♀	
Stephens	326	Searles' Garden	Apr. 23, 1891	♂	
Nelson	806	Surprise Cañon	Apr. 20, 1891	♂	
Fisher	991	Three Rivers	Sept. 16, 1891	♀	
Fisher	990	Three Rivers	Sept. 16, 1891	♂	
Fisher	989	Three Rivers	Sept. 16, 1891	♂	
Fisher	988	Three Rivers	Sept. 16, 1891	♂	
Fisher	976	Three Rivers	Sept. 14, 1891	♀	
Bailey	2962	Wild Rose Spring	June 24, 1891	♀	
Fisher	702	Wild Rose Spring	June 24, 1891	♀	
Bailey	2963	Wild Rose Spring	June 24, 1891	♂	
Nelson	1212	Yosemite Valley	Aug. 7, 1891	♂	

Vespertilio fuscus
Eptesicus fuscus bernardinus (40), *E. fuscus pallidus* (4)

Four Brown Bats were collected at Saint George, Utah on May 12 or 13, and the remaining specimens from the Death Valley Expedition were captured at 17 locations in California as outlined in the table below. The taxon was found to be common at Walker Basin near the southern end of the Sierra Nevada mountains. They were common in Yosemite and on the Kings River, and they were probably common at old Fort Tejon. In addition to the two captured at Pruit's Ranch on the South Fork of the Kern River, several more were likely seen there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3234	Big Whitney Meadows	Aug. 23, 1891	♂	
Bailey	3209	Dick's Ranch	Aug. 15, 1891		
Palmer	253	Fort Tejon	July 7, 1891	♀	
Fisher	871	Halsted Meadows	Aug. 6, 1891	♂	
Fisher	851	Halsted Meadows	Aug. 4, 1891	♂	
Palmer	299	Halsted Meadows	Aug. 4, 1891	♀	
Fisher	862	Halsted Meadows	Aug. 4, 1891	♂	
Fisher	872	Halsted Meadows	Aug. 6, 1891	♂	
Palmer	296	Halsted Meadows	Aug. 4, 1891	♂	
Palmer	297	Halsted Meadows	Aug. 4, 1891	♀	
Palmer	298	Halsted Meadows	Aug. 4, 1891	♀	
Fisher	852	Halsted Meadows	Aug. 4, 1891	♀	
Fisher	911	Horse Corral Meadows	Aug. 11, 1891	♂	
Bailey	3235	Kern River, North Fork, near head	Aug. 25, 1891	♂	
Fisher	768	Kernville	July 11, 1891	♂	
Nelson	1247	Kings River	Aug. 19, 1891	♂	
Nelson	1246	Kings River	Aug. 19, 1891	♀	
Bailey	3197	Little Kern River, near source	Aug. 10, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3198	Little Kern River, near source	Aug. 10, 1891	♀	
Bailey	3199	Little Kern River, near source	Aug. 10, 1891	♀	
Fisher	664	Lone Pine	June 6, 1891	♂	
Nelson	985	Lone Pine	June 18, 1891	♀	
Fisher	663	Lone Pine	June 6, 1891	♂	
Palmer	187	Lone Pine	June 9, 1891	♀	
Fisher	662	Lone Pine	June 5, 1891	♀	
Fisher	684	Lone Pine	June 10, 1891	♀	
Stephens	627	Olancha	June 14, 1891	♂	
Fisher	726	Pruit's Ranch	July 4, 1891	♂	
Bailey	2988	Pruit's Ranch	July 4, 1891	♂	
Fisher	929	Round Valley	Aug. 27, 1891	♀	
Bailey	2772	Saint George	May 12, 1891	♀, ad	
Bailey	2777	Saint George	May 13, 1891	♀	
Bailey	2776	Saint George	May 13, 1891	♀	
Bailey	2775	Saint George	May 13, 1891	♀	
Fisher	822	Three Rivers	July 27, 1891	♀	
Bailey	3201	Trout Meadows	Aug. 11, 1891	♂	
Bailey	3200	Trout Meadows	Aug. 11, 1891	♀	
Bailey	3202	Trout Meadows	Aug. 11, 1891	♂	
Bailey	3046	Walker Basin	July 13, 1891	♀	
Fisher	779	Walker Basin	July 15, 1891	♀	
Fisher	769	Walker Basin	July 13, 1891	♀	
Bailey	3045	Walker Basin	July 13, 1891	♀	
Nelson	1216	Yosemite Valley	Aug. 7, 1891	♂	
Nelson	1213	Yosemite Valley	Aug. 7, 1891	♂	

Lasiurus borealis teliotis
Lasiurus blossevillii teliotis

Mr. Bailey shot one Western Red Bat at a bridge that crossed the Kern River a mile west of Bakersfield on July 17. Some others may have also been seen there. And Mr. Fisher collected one individual at Three Rivers on September 16.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3067	Bakersfield	July 17, 1891	♀	
Fisher	993	Three Rivers	Sept. 16, 1891	♂	

Lasiurus cinereus
Lasiurus cinereus cinereus

In Nevada, one Hoary Bat was collected at Cottonwood Springs in the southwestern corner of the Las Vegas Valley.

In California, the taxon was collected at Pruit's Ranch on the South Fork of the Kern River, Surprise Cañon on the west slope of the Panamint Mountains, and the head of Willow Creek in the Panamint Range, which is located between Panamint and Saline valleys. The animal at Willow Creek was collected as it hung on to the top of a small *Prunus* bush on the side of the cañon that contains the creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2707	Cottonwood Springs, Las Vegas Valley	Apr. 30, 1891	♀	
Fisher	743	Pruit's Ranch	July 6, 1891	♂	
Nelson	813	Surprise Cañon	Apr. 18, 1891	♀	
Nelson	870	Willow Creek, Panamint Mountains, head of	May 17, 1891	♀	

FAMILY MOLOSSIDAE

Nyctinomus mohavensis
Tadarida brasiliensis mexicana

The Free-tailed Bat was collected at Furnace Creek Ranch and Saratoga Springs in Death Valley. It appeared to be common at the latter location. They were also numerous in the San Joaquin Valley about Visalia, 20–40 were collected in the joints of a wagon bridge across Elk Bayou near Tulare, and five were collected at Three Rivers. One was collected at Auburn in the western foothills of the central portion of the Sierra Nevada, and one was collected at Mineral King toward the southern third of that mountain range.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3429	Auburn	Oct. 20, 1891	♀	
Bailey	3104	Elk Bayou	July 22, 1891	♂	
Bailey	3105	Elk Bayou	July 22, 1891	♂	
Fisher	818	Elk Bayou	July 22, 1891	♂	
Fisher	817	Elk Bayou	July 22, 1891	♂	
Fisher	816	Elk Bayou	July 22, 1891	♀	
Bailey	3106	Elk Bayou	July 22, 1891	♀	
Bailey	2642	Furnace Creek	Apr. 9, 1891	♂	
Bailey	2644	Furnace Creek	Apr. 9, 1891	♂	
Nelson	683	Furnace Creek	Mar. 22, 1891	♂	
Nelson	684	Furnace Creek	Mar. 22, 1891	♂	
Fisher	438	Furnace Creek	Mar. 23, 1891	♂	
Bailey	3258	Mineral King	Sept. 11, 1891	♂, imm	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2439	Saratoga Springs	Feb. 2, 1891	♂	
Bailey	2446	Saratoga Springs	Feb. 4, 1891	♂	
Fisher	832	Three Rivers	July 29, 1891	♀	
Fisher	833	Three Rivers	July 29, 1891	♀	
Fisher	834	Three Rivers	July 29, 1891	♀	
Fisher	975	Three Rivers	Sept. 14, 1891	♀	
Fisher	992	Three Rivers	Sept. 16, 1891	♀	
Bailey	3108	Visalia	July 22, 1891	♀	
Bailey	3107	Visalia	July 22, 1891	♀	

ORDER CARNIVORA

FAMILY URSIDAE

Ursus horribilis californicus
Ursus arctos

The California Grizzly was not collected or observed by members of the Death Valley Expedition. Stories about that bear were, however, conveyed to the Expedition biologists as they traveled through California's Central Valley and Sierra Nevada. The veracity of those stories is difficult to assess, and some of the stories may have actually pertained to the more common Black Bear. The area around San Emigdio Cañon and Mount Piños (Mount McGill) may have been visited by Grizzly Bears in the summer of 1891 (Nelson 1891-22). In the Sierra Nevada, the biologists were told stories of grizzlies being present in the Merced River, Kings River, and Kern River watersheds, and Yosemite (Nelson 1891-27). They also appear to have been present in the Topanga Mountains (Nelson 1892-2). They may have been formerly common somewhere between San Simeon and Carpinteria (Nelson 1891-26) and between La Panza and San Luis Obispo (Nelson 1891-24), but were practically extinct in both areas in 1891.

Ursus americanus altifrontalis
Ursus americanus

In September, Mr. Nelson caught four Black Bears at Kern River Lakes on the Kern River.

The Death Valley Expedition biologists noted or heard stories about "brown bears" during their fieldwork in 1891. They were told by local citizens those bears were the most common species found in the Sierras (thereby suggesting the "brown bears" may have been a color phase of Black Bears) and they were generally distributed from about 4,000 up to 9,000 or 10,000 feet (Nelson 1891-27). In summer, the brown bears follow bands of sheep about the mountains for the carcasses of those which die, and in fall when the sheep are driven out of the mountains. They find an abundance of food in the manzanita berries and acorns of the higher foothills adjacent to those mountains.

Mr. Nelson learned they were not uncommon on the upper part of the Kings River (Nelson 1891-27), but they were probably more numerous on the North Fork of the Kern River from 6,000 to 9,000 ft. than anywhere else he visited. Mr. Nelson was told by a Mr. Clark that they were very common on the Merced and San Joaquin rivers at one time, but they were scarce there in 1891 (Nelson 1891-27).

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1256	Kern River Lakes	Sept. 13, 1891	♂	
Nelson	1255	Kern River Lakes	Sept. 6, 1891	♀	
Nelson	1254	Kern River Lakes	Sept. 6, 1891	♂	
Nelson	1253	Kern River Lakes	Sept. 4, 1891	♀	

FAMILY CANIDAE

Canis gigas
Canis lupus

The Nelson 1891-27 special report states "The gray wolf [Northwestern Timber Wolf] is still found in the forests of the Merced and San Joaquin Rivers as I learned from several old residents and trappers in that region but all agree in stating that they were very scarce". None of the Death Valley Expedition biologists claimed they personally saw or collected a wolf during that expedition.

Canis latrans estor
Canis latrans mearnsi (14), *C. latrans ochropus* (6)

Three Desert Coyotes were collected in Nevada in the Pahrump Valley where they were common, and one was collected in the Las Vegas Valley but was not included in Mr. Bailey's field catalog.

In California, they were collected at Cameron, Coso where they were very abundant, Furnace Creek where they were also common, Granite Springs, the town of Independence, at Lone Willow Spring in Panamint Valley, Medbury Spring along the Amargosa River, and in the Inyo Mountains near Waucoba Mountain where they were common from the bottom of valleys up to 11,000 ft. and where they were found hunting *Arctomys* [marmots]. Several were collected at Willow Spring southwest of the town of Mohave, and one was taken on Willow Creek in the Panamint Range.

As outlined in the table below, their vocalizations or sightings occurred at multiple locations in Nevada and California and during a wide variety of time periods.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	198	Cameron	June 26, 1891		
Fisher	608	Coso	May 20, 1891	♂, ad	
Fisher	98	Furnace Creek	Jan. 29, 1891	♂	
Fisher	109	Furnace Creek	Jan. 31, 1891	♀, ad	
Palmer	49	Furnace Creek	Feb. 1, 1891	♂	
Fisher	37	Granite Springs	Jan. 14, 1891	♂	
Bailey	2950	Independence	June 11, 1891	♀	
Nelson	1043	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Bailey		Las Vegas Valley	Mar. 12, 1891		not in Bailey catalog
Nelson	303	Lone Willow Spring	Jan. 17, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2533	Medbury Spring	Feb. 26, 1891	♂	
Palmer	86	Pahrump Valley	Feb. 15, 1891	♂	
Palmer	85	Pahrump Valley	Feb. 15, 1891	♂	
Palmer	81	Pahrump Valley	Feb. 12, 1891	♀	
Nelson	873	Willow Creek, Panamint Mountains, head of	May 17, 1891		
Palmer	199	Willow Spring (13 miles southwest of Mohave)	June 27, 1891		
Palmer	200	Willow Spring (13 miles southwest of Mohave)	June 27, 1891		
Palmer	201	Willow Spring (13 miles southwest of Mohave)	June 27, 1891		
Palmer	202	Willow Spring (13 miles southwest of Mohave)	June 27, 1891		
Palmer	212	Willow Spring (13 miles southwest of Mohave)	June 27, 1891		
Stephens		Borax Flat Borax Works			OSTB April 28 & 30, 1891
Bailey		Death Valley			OSTB Jan. 20 – Feb. 7, 1891
Stephens		Indian Queen Mill			OSTB July 11 & 16, 1891
Nelson		Las Vegas Valley			OSTB March 10 & 13, 1891
Stephens		Little Lake			OSTB May 6 & 11, 1891
Stephens		Oasis Valley			OSTB March 15 & 19, 1891
Stephens		Salt Wells Valley (Indian Wells Valley)			OSTB May 1 & 5, 1891
Stephens		Thorpe Mill			OSTB March 28 & 30, 1891

Canis latrans lestes
Canis latrans lestes

One Mountain Coyote specimen was collected on Cloverdale Creek in central Nevada on November 30 by Mr. Bailey, and he made observations of them in the Reese River Valley sometime between November 3 and 26 in 1890. He inferred they were abundant throughout the Cloverdale Creek–Reese River region.

One Mountain Coyote was observed at Monache Meadows in California on the east slope of the Sierra between May 24 and 27.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2223	Cloverdale Creek, 3 miles below the divide	Nov. 30, 1890	♀	
Stephens		Monache Meadows			OSTB May 24 & 27, 1891
Bailey		Reese River Valley			OSTB Nov. 3 & 26, 1890

Canis latrans ochropus
Canis latrans ochropus

Two California Valley Coyotes were collected 12 miles west of San Luis Obispo in November by Mr. Nelson. Mr. Bailey made observations of them in Monterey, where he found them to be common. He also noted their presence at Walker Basin where he saw three and heard others, so he believed they were common there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1565	San Luis Obispo, 12 miles west of	Nov. 29, 1891	♀	
Nelson	1554	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	
Bailey		Monterey			OSTB Sept. 28 & Oct. 9, 1891
Bailey		Walker Basin			OSTB July 13 & 16, 1891

Vulpes necator
Vulpes vulpes necator

Two Red Fox were collected by Mr. Dutcher at Big Cottonwood Meadows. A single adult female red fox was collected by Mr. Fisher at Big Whitney Meadows on September 1. At the town of Austin in Nevada between November 3 and 26, Mr. Bailey observed part of the skin of a red fox a man told him was brought there by Indians.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	25	Big Cottonwood Meadows	July 5, 1891	♂	
Dutcher	20	Big Cottonwood Meadows	July 4, 1891	♀, juv	
Fisher	940	Big Whitney Meadows	Sept. 1, 1891	♀, ad	
Bailey		Austin			OSTB Nov. 3 & 26, 1890

Vulpes macrotis arsipus
Vulpes macrotis

Three Mohave Desert Kit Fox were collected at the Borax Flat Borax Works in Searles Valley, and three additional specimens were collected ~ 15 miles southeast of there at Lone Willow Spring. One of these foxes was collected at Resting Springs, and they seemed to be rather common all along the Amargosa Valley with their tracks being frequently seen. One individual was taken at the town of Daggett by Mr. Fisher on January 10.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	367	Borax Flat Borax Works	Apr. 30, 1891	♀, juv	
Stephens	366	Borax Flat Borax Works	Apr. 30, 1891	♂, juv	
Stephens	365	Borax Flat Borax Works	Apr. 29, 1891	♀	
Fisher	16	Daggett	Jan. 10, 1891	♂	
Bailey	2400	Lone Willow Spring	Jan. 15, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2399	Lone Willow Spring	Jan. 15, 1891	♂	
Nelson	302	Lone Willow Spring	Jan. 17, 1891	♂	
Bailey	2481	Resting Springs	Feb. 13, 1891	♀	

Vulpes macrotis macrotis
Vulpes macrotis

One Long-eared Kit Fox was collected in the southern portion of California at Palm Springs by Mr. Stephens on September 28. He did not believe they were common there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	934	Palm Springs	Sept. 28, 1891	♂	

Vulpes macrotis nevadensis
Vulpes macrotis

Mr. Bailey observed a single individual of this subspecies of *Vulpes macrotis* while camped on the edge of the Columbus Salt Marsh. In the night, the fox went under a wagon close to where he was sleeping, it tore open a sack, and gnawed on some of his provisions. Its tracks were found all around his tent the next morning, and it had eaten a *Dipodomys deserti* that was in a trap nearby.

Urocyon cinereoargenteus californicus
Urocyon cinereoargenteus californicus (9), *U. cinereoargenteus scotti* (1)

The range of the California Gray Fox occurs in the southwestern portion of California. The Death Valley Expedition members collected this taxon at Gaviota Pass, near Nordhoff (i.e., Ojai Valley), Pruit's Ranch on the South Fork of the Kern River, Reche Cañon in Riverside County, 12 miles west of San Luis Obispo, at the Santa Yñez Mission, and near the Ventura River in Ventura County.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1642	Gaviota Pass	Dec. 10, 1891	♀	
Nelson	1641	Gaviota Pass	Dec. 10, 1891	♂	
Nelson	1743	Nordhoff, near to	Dec. 26, 1891	♂	
Fisher	758	Pruit's Ranch	Jul. 9, 1891	♂	
Stephens	895	Reche Cañon	Sept. 23, 1891		skin
Nelson	1538	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	
Nelson	1603	Santa Yñez Mission	Dec. 6, 1891	♂	
Nelson	1598	Santa Yñez Mission	Dec. 5, 1891	♀	
Nelson	1697	Ventura River, near to	Dec. 21, 1891	♀	
Nelson	1696	Ventura River, near to	Dec. 21, 1891	♀	

Urocyon cinereoargenteus scotti
Urocyon cinereoargenteus scotti

The skin of an Arizona Gray Fox was seen by Mr. Bailey at the Las Vegas Ranch in Nevada sometime between March 7 and 16. He was told by one of the ranch men it had been killed there.

Urocyon cinereoargenteus townsendi
Urocyon cinereoargenteus townsendi

A Townsend Gray Fox was captured at Boulder Creek in October by Mr. Bailey. They seemed to be common there, and they fed mostly on *Arctostaphylos* berries. Their dung was scattered all along the local trails. Mr. Nelson caught seven of these foxes in the mountains near San Simeon over a two-day period in mid-November. He noted they were abundant from near sea level to the tops of the mountains in that area. They were easily trapped.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3410	Boulder Creek	Oct. 14, 1891	♀	
Nelson	1505	San Simeon, mountains near to	Nov. 18, 1891	♀	
Nelson	1502	San Simeon, mountains near to	Nov. 18, 1891	♀	
Nelson	1501	San Simeon, mountains near to	Nov. 18, 1891	♂	
Nelson	1500	San Simeon, mountains near to	Nov. 18, 1891	♂	
Nelson	1497	San Simeon, mountains near to	Nov. 17, 1891	♂	
Nelson	1495	San Simeon, mountains near to	Nov. 17, 1891	♂	
Nelson	1487	San Simeon, mountains near to	Nov. 17, 1891	♂	

FAMILY PROCYONIDAE

Bassariscus astutus raptor
Bassariscus astutus raptor

Mr. Fisher collected one male adult California Ring-tailed Cat at Three Rivers on September 15. Mr. Nelson observed the same species in Hunter Cañon on the east slope of the Inyo Mountains near Lone Pine sometime between June 24 and July 4. Numerous people at Keeler and Lone Pine and the Indians in Saline Valley told him of the capture of this animal at that location. The animal was caught about the miner cabins where it was quite bold and came out in the evening.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	980	Three Rivers	Sept. 15, 1891	♂, ad	
Nelson		Hunter Cañon			OSTB June 24 & July 4, 1891

Procyon psora psora
Procyon lotor psora

The California Coon was caught at Fort Tejon on the stream near the fort. One was captured at Pruit's Ranch on the South Fork of the Kern River 25 miles from Kernville; that taxon's tracks were common along that

river's banks. They were numerous at Monterey. At San Emigdio, they were common along every stream when trees or other shelter were found. At Santa Yñez Mission, they were common along streams from sea level up to over 2,500 feet in elevation. One raccoon was caught at Three Rivers, and another was captured 12 miles west of San Luis Obispo.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	218	Fort Tejon	July 4, 1891	♀	
Bailey	3366	Monterey	Oct. 3, 1891	♀, imm	
Bailey	3355	Monterey	Oct. 1, 1891	♀	
Fisher	745	Pruit's Ranch	July 7, 1891	♀	
Nelson	1371	San Emigdio	Oct. 24, 1891	♀	
Nelson	1370	San Emigdio	Oct. 24, 1891	♂	
Nelson	1363	San Emigdio	Oct. 23, 1891	♀	
Nelson	1555	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1607	Santa Yñez Mission	Dec. 7, 1891	♀	
Fisher	1000	Three Rivers	Sept. 17, 1891	♂	

FAMILY - MUSTELIDAE

Martes caurina sierrae
Martes americana sierrae

Mr. Nelson collected one male Sierra Nevada Pine Marten near the head of the Merced River at an elevation of ~ 8,200 feet. Its tracks were numerous along that stream. A professional trapper living between the Merced and San Joaquin rivers told him that he traps many martens every winter in that district between 6,000 and 9,000 feet.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1202	Merced River, near head	Aug. 4, 1891	♂	

Martes pennanti pacifica
Martes pennanti pacifica

The Death Valley Expedition biologists did not capture or observe the Fisher during their fieldwork. According to a professional trapper, the Fisher is found sparingly in the region between the Merced and San Joaquin rivers, and he takes a few each winter (Nelson 1891-27).

Gulo luscus luteus
Gulo gulo luteus

The Death Valley Expedition biologists did not capture or observe the Sierra Nevada Wolverine during their fieldwork. Mr. J. H. Lowry, a professional trapper who lived between the Merced and San Joaquin rivers for years, told Mr. Nelson he had made a business of trapping there during the winter and he had caught several of them there (Nelson 1891-27). He specifically noted he trapped one, and it carried off the trap for miles across

the mountains to the very head of the Merced River, where the animal escaped among a mass of great rocks. When he reached this vicinity, Mr. Lowry said he saw an abundance of wolverine tracks all about in the snow as though a number of them were living in that locality.

Putorius sp.
Mustela sp.

Merriam (1896) only recognizes two types of weasels in the area traversed by Death Valley Expedition staff, i.e., *Putorius arizonensis* and *Putorius xanthogenys*.

A single unidentified weasel was seen by Mr. Bailey at Kern River Lakes on the North Fork of the Kern River sometime between August 1 and September 30. It was likely a mountain weasel (*P. arizonensis*) based on the elevation at the observation.

Putorius arizonensis
Mustela frenata nevadensis (4), *M. frenata pulchra* (1)

In Utah, a single Mountain Weasel specimen was collected at Saint George in May.

That species was collected by Expedition members in California at Big Cottonwood Meadows, the East Fork of the Kaweah River at an elevation of ~ 9,800 feet, and at Willow Spring 13 miles southwest of the town of Mohave. At Monache Meadows, Mr. Stephens saw one in a large pile of rocks in late May.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	205	Big Cottonwood Meadows	Sept. 6, 1891	♀	
Dutcher	202	Big Cottonwood Meadows	Aug. 28, 1891	♂	
Bailey	3190	Kaweah River, East Fork, Mineral King	Aug. 8, 1891	♂, ad	
Bailey	2784	Saint George	May 14, 1891	♀, ad	
Palmer	203	Willow Spring (13 miles southwest of Mohave)	June 27, 1891		
Stephens		Monache Meadows			OSTB May 24 & 27, 1891

Putorius xanthogenys
Mustela frenata inyoensis (2), *M. frenata nigriauris* (1)

One California Weasel was collected at each of the following locations: Alvord and Lone Pine in the Owens Valley, and at Morro. The one collected at Lone Pine was taken in a patch of brush near the Owens River at a large *Neotoma* "house".

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	665	Alvord	June 28, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2306	Lone Pine	Dec. 24, 1890	♂	
Nelson	1469	Morro	Nov. 11, 1891	♀	

Mustela vison energumenos
Neovison vison

The Death Valley Expedition biologists did not capture or observe the Pacific Mink during their fieldwork. Mr. Bailey was told by locals that they were to be found along Owens River and the branches of it (Bailey 1890-1). Grinnell (1913) notes the taxon is present through Owens Valley at least to Fish Springs near Big Pine.

Spilogale gracilis
Spilogale gracilis gracilis

Mr. Fisher and Nelson captured a total of three Canyon Spotted Skunks in Johnson Cañon in early April.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	507	Johnson Cañon	Apr. 5, 1891	♂	
Fisher	478	Johnson Cañon	Apr. 2, 1891	♂	
Nelson	730	Johnson Cañon	Apr. 2, 1891	♂	

Spilogale phenax
Spilogale gracilis phenax

The California Spotted Skunk was collected by Expedition members across a broad swath of California, as identified in the table below. They were common at Boulder Creek, San Emigdio Cañon, Pozo, and 12 miles west of San Luis Obispo. They were found to be especially common along streams and arroyos. Mr. Nelson observed one sometime between July 21 and August 21 near the head of the Merced River.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3436	Auburn	Oct. 21, 1891	♀	
Bailey	3399	Boulder Creek	Oct. 14, 1891	♂	
Bailey	3210	Dicks Ranch	Aug. 17, 1891	♀, imm	
Fisher	949	Kern River Lakes	Sept. 7, 1891	♂	
Nelson	1444	Morro	Nov. 8, 1891	♂	
Nelson	1420	Pozo	Nov. 1, 1891	♂	
Stephens	921	Reche Cañon	Sept. 24, 1891	♂	
Nelson	1372	San Emigdio	Oct. 24, 1891	♂	
Nelson	1349	San Emigdio	Oct. 22, 1891	♀	
Nelson	1362	San Emigdio	Oct. 23, 1891	♂	
Nelson	1347	San Emigdio	Oct. 21, 1891	♀	
Nelson	1350	San Emigdio	Oct. 22, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1423	San Luis Obispo	Nov. 5, 1891	♀	
Nelson	1557	San Luis Obispo, 12 miles west of	Nov. 28, 1891	♂	
Nelson	1564	San Luis Obispo, 12 miles west of	Nov. 29, 1891	♂	
Nelson	1540	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1759	Santa Paula	Dec. 29, 1891	♂	
Nelson	1786	Santa Paula	Jan. 3, 1892	♀	
Nelson	1604	Santa Yñez Mission	Dec. 6, 1891	♀	
Fisher	826	Three Rivers	July 28, 1891	♀	
Fisher	974	Three Rivers	Sept. 14, 1891	♂, ad	
Fisher	981	Three Rivers	Sept. 15, 1891	♂, ad	
Fisher	984	Three Rivers	Sept. 16, 1891	♂, ad	
Fisher	985	Three Rivers	Sept. 16, 1891	♀, imm	
Palmer	286	Three Rivers	July 30, 1891	♀	
Nelson	1693	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1666	Ventura River, near to	Dec. 20, 1891	♂	
Nelson		Merced River, near head			OSTB July 21 & Aug. 21, 1891

Mephitis mephitis estor
Mephitis mephitis estor

The Death Valley Expedition biologists did not capture or observe the Arizona Striped Skunk during their fieldwork. But Mr. Fisher believes he found droppings and old holes made by skunks among rocks in the northwestern corner of the Pahrump Valley. The morning he left the valley in mid- to late-February, he smelled the strong odor of one of these animals in the bottom of the valley. Nelson's 1891-30 special report suggests that scent was possibly due to a striped skunk, and if true, the scent would be associated with an Arizona Striped Skunk due to that taxon's geographic range. It is possible the smell was actually caused by a spotted skunk.

Mephitis mephitis holzneri
Mephitis mephitis holzneri (20), *M. mephitis occidentalis* (2)

The Southern California Striped Skunk was collected along coastal areas such as Gaviota Pass, Monterey, Morro, 12 miles west of San Luis Obispo, near San Simeon, and near the Ventura River to inland areas such as the Santa Yñez Mission. They were also collected in inland areas that included Pruit's Ranch on the South Fork of the Kern River, San Emigdio, Santa Paula, and Three Rivers. They seemed to be common on the Kern River, and at Monterey and San Emigdio.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1640	Gaviota Pass	Dec. 10, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1627	Gaviota Pass	Dec. 9, 1891	♂	
Bailey	3385	Monterey	Oct. 8, 1891	♀	
Bailey	3365	Monterey	Oct. 2, 1891	♂	
Bailey	3354	Monterey	Oct. 1, 1891	♂	
Nelson	1470	Morro	Nov. 12, 1891	♂	
Bailey	2998	Pruit's Ranch	July 5, 1891	♂	
Fisher	754	Pruit's Ranch	July 8, 1891	♂	
Fisher	744	Pruit's Ranch	July 7, 1891	♂, imm	
Nelson	1373	San Emigdio	Oct. 25, 1891	♀	
Nelson	1539	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	
Nelson	1511	San Simeon, near to	Nov. 21, 1891	♀	
Nelson	1523	San Simeon, near to	Nov. 22, 1891	♂	
Nelson	1766	Santa Paula	Dec. 30, 1891		
Nelson	1787	Santa Paula	Jan. 3, 1892	♀	
Nelson	1600	Santa Yñez Mission	Dec. 5, 1891	♀	
Nelson	1605	Santa Yñez Mission	Dec. 6, 1891	♂	
Nelson	1606	Santa Yñez Mission	Dec. 7, 1891	♂	
Fisher	983	Three Rivers	Sept. 15, 1891	♀, ad	
Bailey	3276	Three Rivers	Sept. 17, 1891	♀, imm	
Fisher	982	Three Rivers	Sept. 15, 1891	♂, ad	
Nelson	1700	Ventura River, near to	Dec. 22, 1891	♀	

Mephitis mephitis occidentalis
Mephitis mephitis occidentalis

The Northern California Striped Skunk was collected at Auburn where they appeared to be numerous, at Cartago and Olancha in Owens Valley, at Fish Slough, and on the west side of the Sierra at Wawona and Yosemite Valley.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3435	Auburn	Oct. 21, 1891	♀	
Bailey	3430	Auburn	Oct. 20, 1891	♀	
Stephens	619	Cartago	June 11, 1891	♀	
Stephens	679	Fish Slough	July 3, 1891	♀	
Stephens	678	Fish Slough	July 3, 1891	♀	
Stephens	506	Olancha	May 21, 1891	♀	
Nelson	1229	Wawona	Aug. 10, 1891	♀	
Nelson	1224	Yosemite Valley	Aug. 8, 1891	♀	
Nelson	1223	Yosemite Valley	Aug. 8, 1891	♀	
Nelson	1222	Yosemite Valley	Aug. 8, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1221	Yosemite Valley	Aug. 8, 1891	♂	

Taxidea taxus berlandieri
Taxidea taxus berlandieri

The Mexican Badger was collected or observed by Expedition members at more southerly and easterly locations than the California Badger. The former animal was collected in Nevada at Ash Meadows and at Las Vegas Ranch, where they were thought to be common.

In California, the taxon was collected at Bennett Wells and Saratoga Springs in Death Valley, at Olancha in the Owens Valley, at Big Whitney Meadows, and near the head of Willow Creek in the Panamint Mountains. They were thought to be common in the Panamint Mountains. Mr. Fisher observed a sleeping badger at Coso in May near the summit of a ridge at ~ 8,000 feet.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	388	Ash Meadows	Mar. 12, 1891	♀	
Nelson	570	Bennett Wells	Jan. 28, 1891		
Fisher	938	Big Whitney Meadows	Aug. 31, 1891	♀, ad	
Bailey	2602	Las Vegas Ranch	Mar. 12, 1891	♂	
Stephens	828	Olancha	Aug. 18, 1891	♂	
Bailey	2438	Saratoga Springs	Feb. 2, 1891		
Nelson	868	Willow Creek, Panamint Mountains, head of	May 17, 1891	♀	
Nelson	849	Willow Creek, Panamint Mountains, head of	May 11, 1891	♂	
Fisher		Coso			OSTB May 17 & 29, 1891

Taxidea taxus neglecta
Taxidea taxus jeffersonii

Mr. Bailey collected a California Badger at Pruit's Ranch on the South Fork of the Kern River and Mr. Nelson collected one near the head of the San Joaquin River at ~ 8,100 feet near Mt. Lyell. Mr. Nelson saw the skins of this type of badger that had been killed by hunters who frequented the head of the Merced River. He also saw similar skins of animals taken at San Luis Obispo. And he noted their burrows at Santa Barbara sometime between November 4 and December 18.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3024	Pruit's Ranch	July 7, 1891	♀, imm	
Nelson	1177	San Joaquin River, near head	July 28, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson		Merced River, near head			OSTB July 21 & Aug. 21, 1891
Nelson		San Luis Obispo			OSTB Nov. 4 & Dec. 18, 1891
Nelson		Santa Barbara			OSTB Nov. 4 & Dec. 18, 1891

Taxidea taxus taxus
Taxidea taxus jeffersonii

The *taxus* subspecies of *Taxidea taxus* was observed by Mr. Bailey to be abundant in the Reese River Valley of Nevada, where holes were everywhere and lots of tracks were seen. One badger was seen near Austin as it was lying on a mound of earth at its hole sunning itself. When Bailey fired at the animal and missed, it retreated to its home, and within 10 seconds had filled the hole behind itself with dirt.

Lutra canadensis pacifica
Lontra canadensis pacifica

The Death Valley Expedition biologists did not capture or observe Pacific River Otters during their field-work. Mr. Nelson was told by a local citizen that otters were observed in Yosemite in ~ 1871 (Nelson 1891-27). They were once numerous about Tulare Lake and the San Joaquin River but may have no longer existed there in 1891 (Nelson 1891-25). Mr. Bailey thought he saw the tracks of older and younger individuals at Kern River Lakes on the North Fork of the Kern River (Bailey 1891-22), and Nelson thought he saw their tracks on the Kings River (Nelson 1891-27).

FAMILY FELIDAE

Felis oregonensis oregonensis
Puma concolor couguar

Mr. Nelson secured a Cougar specimen at the head of San Emigdio Cañon on October 19. Sometime between May 12 and 14, Mr. Stephens saw the skin of this taxon at a ranch at Haiwee Meadows. Mr. Nelson saw one near the Ventura River in December of 1891 or January 1892. He was told they live in the dense brush by the river.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1333	San Emigdio Cañon, head of	Oct. 19, 1891		
Stephens		Haiwee Meadows			OSTB May 12 & 14, 1891
Nelson		Ventura River, near to			OSTB Dec. 12, 1891 & Jan. 4, 1892

Lynx rufus baileyi
Lynx rufus baileyi

The Desert Wildcat occurs in the deserts of California in the southeastern part of that state. Mr. Nelson shot one of these animals near Darwin. Bailey collected one in Death Valley at the base of the Panamint Mountains. Mr. Nelson collected one on June 11 on Grapevine Peak at an altitude of 8,200 feet. And Mr. Palmer collected

one in Pahrump Valley on March 6 and another on Tyndall Creek on August 31. In Nevada in March, Bailey and Nelson noted a skin or the tracks of the wildcat at the Las Vegas Ranch and in the Vegas Wash.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	168	Darwin	Dec. 31, 1890	♂	
Bailey	2426	Death Valley, at base of Panamint Mountains	Jan. 24, 1891		
Nelson	975	Grapevine Peak	June 11, 1891	♀	
Palmer	134	Pahrump Valley	Mar. 6, 1891	♂	
Palmer	320	Tyndall Creek	Aug. 31, 1891		
Bailey		Las Vegas Ranch			OSTB March 7 & 16, 1891
Nelson		Las Vegas Wash			OSTB March 10 & 13, 1891

Lynx rufus californicus
Lynx rufus californicus

The California Wildcat's geographic range is situated west of the Desert Wildcat's range. Specimens were collected three miles northeast of Caliente, at Carpinteria, Fort Tejon, where they were common in that vicinity, 5 miles west of Tejon Pass, near Nordhoff in the Ojai Valley, and two were collected at San Emigdio. Mr. Nelson cornered one of these bobcats on a rocky point near Morro Bay and it leaped over 30 feet down into the sea and swam about 20 yards across a strip of boiling surf to a rocky point where it was shot. In its struggles, it fell back into the ocean and was lost.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	197	Caliente, 3 miles northeast of	June 24, 1891		
Nelson	1664	Carpinteria	Dec. 19, 1891		
Palmer	276	Fort Tejon	July 7, 1891		
Nelson	1732	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1364	San Emigdio	Oct. 23, 1891	♂	
Nelson	1351	San Emigdio	Oct. 22, 1891	♀	
Nelson	1289	Tejon Pass, 5 miles west of	Oct. 14, 1891		
Nelson		Morro			OSTB Nov. 4 & Dec. 18, 1891
Nelson		Nordhoff, near to			OSTB Nov. 4 & Dec. 18, 1891

Lynx rufus pallescens
Lynx rufus pallescens

On November 6, 1890, Mr. Bailey collected the skull of a *Lynx rufus pallescens* (Bailey catalog # 2088) halfway between Battle Mountain and Austin in central Nevada, and tracks of that taxon were seen in that area.

ORDER PINNIPEDIA

FAMILY OTARIIDAE

Zalophus californianus
Zalophus californianus

Sometime between September 28 and October 9 at Monterey, Mr. Bailey noted "Sea lions of what I suppose are two species are common along shore. One is pale rufus, the other dark chestnut." His reference to the dark chestnut animals pertains to the California Sea Lion.

FAMILY PHOCIDAE

Phoca richardii geronimensis
Phoca vitulina richardii

Sometime between September 28 and October 9 at Monterey, Mr. Bailey noted "Sea lions of what I suppose are two species are common along shore. One is pale rufus, the other dark chestnut." His reference to the pale rufus animals pertains to the California Harbor Seal.

ORDER RODENTIA

FAMILY MURIDAE

Onychomys leucogaster brevicaudus
Onychomys leucogaster brevicaudus

This subspecies of grasshopper mouse was collected by Mr. Bailey in Nevada at Battle Mountain, five miles south of Austin, at the junction of Indian Creek and the Reese River, the Lander–Nye County line, and Silver Creek. They were generally found among sagebrush.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2123	Austin, 5 miles south of	Nov. 13, 1890	♂	
Bailey	2112	Austin, 5 miles south of	Nov. 12, 1890	♀	
Bailey	2103	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2067	Battle Mountain	Nov. 4, 1890	♂	
Bailey	2207	Reese River, at junction of Indian Creek	Nov. 27, 1890	♂	
Bailey	2196	Reese River, Lander–Nye County line	Nov. 24, 1890	♀	
Bailey	2152	Reese River, Lander–Nye County line	Nov. 20, 1890	♂	
Bailey	2149	Reese River, Lander–Nye County line	Nov. 20, 1890		
Bailey	2086	Silver Creek	Nov. 8, 1890	♂	

Onychomys torridus clarus
Onychomys torridus clarus

This subspecies of grasshopper mouse was collected in California at Haiwee Meadows, at Hot Springs Valley where they were caught with rolled oats bait, Keeler, Lone Pine, and at Olancha where they were not common.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	436	Haiwee Meadows	May 13, 1891	♀	
Stephens	403	Hot Springs Valley	May 7, 1891	♂	
Stephens	402	Hot Springs Valley	May 7, 1891	♀	
Bailey	2314	Keeler	Dec. 30, 1890	♂	
Bailey	2313	Keeler	Dec. 30, 1890	♂	
Nelson	9	Keeler	Nov. 30, 1890	♂	
Bailey	2260	Lone Pine	Dec. 16, 1890	♂	
Bailey	2254	Lone Pine	Dec. 15, 1890	♀	
Stephens	512	Olancha	May 22, 1891	♂	
Stephens	511	Olancha	May 22, 1891	♂	
Stephens	510	Olancha	May 22, 1891	♀	
Stephens	499	Olancha	May 21, 1891	♂	
Stephens	471	Olancha	May 18, 1891	♀	

Onychomys torridus longicaudus
Onychomys torridus longicaudus

This subspecies of grasshopper mouse was collected in Arizona, Nevada, and California. In Arizona, it was collected on the Virgin River seven miles upstream of Bunkerville.

In Nevada, it was collected at Ash Meadows, the Colorado River at Las Vegas Wash and at Callville, Corn Creek and Cottonwood Springs in the Las Vegas Valley, at the Las Vegas Ranch where they were abundant, Mountain Springs, the southern and northern end of Oasis Valley, at Pahroc Spring, at two locations in the Pahrump Valley, Pahranagat Valley, six miles were of Panaca, and at the base of Table Mountain. In the Pahrump Valley, a pair was taken near the spring in a gravelly field at Pahrump Ranch and in the northwestern arm of the valley. Dr. Fisher and Mr. Nelson took several specimens in that valley among small mesquite patches and small sand dunes.

In California, this grasshopper mouse was collected at the Amargosa Borax Works, Bishop, in Cottonwood Cañon in the Panamint Mountains, at Furnace Creek, near the Hot Springs in Panamint Valley, Maturango Spring, Moran's ranch, Resting Springs, and Willow Creek in the Panamint Mountains.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2517	Amargosa Borax Works	Feb. 26, 1891	♀	
Nelson	581	Ash Meadows	Mar. 3, 1891	♀	
Fisher	307	Ash Meadows	Mar. 3, 1891	♀	
Stephens	669	Bishop	June 30, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	668	Bishop	June 30, 1891	♂	
Bailey	2728	Callville	May 4, 1891	♀	
Bailey	2711	Colorado River at Las Vegas Wash	May 4, 1891	♂	
Bailey	2622	Corn Creek	Mar. 15, 1891	♀, juv	
Nelson	910	Cottonwood Cañon, Panamint Mountains	May 26, 1891	♀	
Nelson	902	Cottonwood Cañon, Panamint Mountains	May 24, 1891	♂	
Bailey	2568	Cottonwood Springs, Las Vegas Valley	Mar. 9, 1891	♀	
Fisher	99	Furnace Creek	Jan. 29, 1891	♀	
Fisher	126	Furnace Creek	Feb. 2, 1891	♂	
Fisher	125	Furnace Creek	Feb. 2, 1891	♀	
Bailey	2358	Hot Springs, Panamint Valley, near to	Jan. 8, 1891	♂	
Bailey	2584	Las Vegas Ranch	Mar. 11, 1891	♂	
Bailey	2594	Las Vegas Ranch	Mar. 12, 1891	♀	
Bailey	2615	Las Vegas Ranch	Mar. 14, 1891	♀	
Bailey	2614	Las Vegas Ranch	Mar. 14, 1891	♀	
Bailey	2612	Las Vegas Ranch	Mar. 14, 1891	♂	
Bailey	2322	Maturango Spring	Jan. 2, 1891	♂	
Stephens	682	Moran's	July 5, 1891	♂	
Bailey	2550	Mountain Springs	Mar. 7, 1891	♀	
Bailey	2876	Oasis Valley, head of valley	June 2, 1891	♀	
Bailey	2875	Oasis Valley, head of valley	June 2, 1891	♂	
Stephens	159	Oasis Valley, lower end	Mar. 18, 1891	♂	
Stephens	150	Oasis Valley, lower end	Mar. 16, 1891	♂	
Bailey	2839	Pahranagat Valley	May 23, 1891	♀, imm	
Bailey	2828	Pahroc Spring	May 22, 1891	♀	
Bailey	2826	Pahroc Spring	May 22, 1891	♂	
Bailey	2827	Pahroc Spring	May 22, 1891	♂	
Nelson	559	Pahrump Valley	Feb. 28, 1891	♂	
Nelson	461	Pahrump Valley	Feb. 17, 1891	♂	
Nelson	561	Pahrump Valley	Feb. 28, 1891	♀	
Nelson	560	Pahrump Valley	Feb. 28, 1891	♂	
Nelson	462	Pahrump Valley	Feb. 17, 1891	♀	
Fisher	277	Pahrump Valley, west side, near Stewart Well	Feb. 28, 1891	♂	
Fisher	276	Pahrump Valley, west side, near Stewart Well	Feb. 28, 1891	♂	
Fisher	274	Pahrump Valley, west side, near Stewart Well	Feb. 28, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	275	Pahrump Valley, west side, near Stewart Well	Feb. 28, 1891	♀	
Bailey	2813	Panaca, 6 miles west of	May 20, 1891	♂	
Fisher	146	Resting Springs	Feb. 7, 1891	♂	
Fisher	147	Resting Springs	Feb. 7, 1891	♀	
Fisher	158	Resting Springs	Feb. 8, 1891	♂	
Fisher	176	Resting Springs	Feb. 11, 1891	♂	
Fisher	196	Resting Springs	Feb. 14, 1891	♂	
Stephens	117	Table Mountain, base of	Mar. 9, 1891	♂	
Bailey	2753	Virgin River, 7 miles above Bunkerville	May 9, 1891	♀, ad	
Bailey	2754	Virgin River, 7 miles above Bunkerville	May 9, 1891	♂, imm	
Nelson	882	Willow Creek, Panamint Mountains	May 19, 1891	♂	
Nelson	875	Willow Creek, Panamint Mountains, head of	May 18, 1891	♀	

Onychomys torridus pulcher
Onychomys torridus pulcher

Mr. Fisher collected one male of this subspecies (Fisher catalog # 28) at Granite Springs on January 15.

Onychomys torridus ramona
Onychomys torridus ramona

Mr. Stephens collected two of these grasshopper mice, both males, at Reche Cañon on September 22.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	891	Reche Cañon	Sept. 22, 1891	♂	
Stephens	890	Reche Cañon	Sept. 22, 1891	♂	

Onychomys torridus tularensis
Onychomys torridus tularensis

Mr. Fisher caught a female of this grasshopper mouse (Fisher catalog # 792) on the mesa a mile north of Bakersfield on July 19.

Reithrodontomys megalotis longicaudus
Reithrodontomys megalotis longicaudus

The California Harvest Mouse was only collected in California. For the sake of brevity, only two of the 17 collections made at Santa Paula are presented in the table below. This subspecies of harvest mouse was collected at Adobe Station, Boulder Creek, Carpinteria, Fort Tejon, Gaviota Pass, Monterey, Morro, Pozo, Reche Cañon,

Riverside, the head of San Emigdio Cañon, San Jacinto, 12 miles west of San Luis Obispo, near San Simeon and Santa Barbara, along the Santa Maria River, at Santa Paula, at Santa Yñez Mission, Three Rivers, and near the Ventura River.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1280	Adobe Station	Oct. 13, 1891	♂	
Bailey	3419	Boulder Creek	Oct. 15, 1891	♂, imm	
Bailey	3418	Boulder Creek	Oct. 15, 1891	♀	
Nelson	1654	Carpinteria	Dec. 19, 1891	♂	
Nelson	1653	Carpinteria	Dec. 19, 1891	♂	
Palmer	263	Fort Tejon	July 8, 1891	♂	
Nelson	1612	Gaviota Pass	Dec. 9, 1891	♂	
Nelson	1637	Gaviota Pass	Dec. 10, 1891	♀	
Nelson	1613	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1636	Gaviota Pass	Dec. 10, 1891	♀	
Bailey	3351	Monterey	Oct. 1, 1891	♂	
Bailey	3348	Monterey	Oct. 1, 1891	♂	
Bailey	3329	Monterey	Sept. 30, 1891	♂	
Bailey	3330	Monterey	Sept. 30, 1891	♂	
Bailey	3331	Monterey	Sept. 30, 1891	♂	
Bailey	3332	Monterey	Sept. 30, 1891	♂	
Bailey	3347	Monterey	Oct. 1, 1891	♂	
Bailey	3363	Monterey	Oct. 2, 1891	♀	
Bailey	3349	Monterey	Oct. 1, 1891	♂	
Bailey	3364	Monterey	Oct. 2, 1891	♀	
Bailey	3350	Monterey	Oct. 1, 1891	♂	
Bailey	3362	Monterey	Oct. 2, 1891	♂	
Bailey	3361	Monterey	Oct. 2, 1891	♂	
Bailey	3360	Monterey	Oct. 2, 1891	♂	
Bailey	3359	Monterey	Oct. 2, 1891	♂	
Bailey	3352	Monterey	Oct. 1, 1891	♀	
Nelson	1461	Morro	Nov. 10, 1891	♀	
Nelson	1460	Morro	Nov. 10, 1891	♀	
Nelson	1393	Pozo	Oct. 29, 1891	♂	
Nelson	1395	Pozo	Oct. 29, 1891	♀	
Nelson	1394	Pozo	Oct. 29, 1891	♀	
Stephens	889	Reche Cañon	Sept. 22, 1891	♂	
Stephens	902	Reche Cañon	Sept. 23, 1891	♀	
Stephens	914	Reche Cañon	Sept. 24, 1891	♀	
Stephens	881	Riverside	Sept. 20, 1891	♀	
Nelson	1323	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1327	San Emigdio Cañon, head of	Oct. 19, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1322	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1324	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1325	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1326	San Emigdio Cañon, head of	Oct. 19, 1891	♀	
Nelson	1321	San Emigdio Cañon, head of	Oct. 18, 1891	♂	
Stephens	950	San Jacinto	Oct. 2, 1891	♀	
Nelson	1544	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	
Nelson	1545	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	
Nelson	1527	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1546	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1547	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1522	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1520	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1519	San Simeon, near to	Nov. 22, 1891	♂	
Nelson	1518	San Simeon, near to	Nov. 22, 1891	♂	
Nelson	1521	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1647	Santa Barbara, near to	Dec. 12, 1891	♂	
Nelson	1646	Santa Barbara, near to	Dec. 12, 1891	♂	
Nelson	1570	Santa Maria River	Dec. 2, 1891	♂	
Nelson	1569	Santa Maria River	Dec. 2, 1891		
Nelson	1568	Santa Maria River	Dec. 2, 1891	♂	
Nelson	1754	Santa Paula	Dec. 29, 1891	♂	
Nelson	1790	Santa Paula	Jan. 4, 1892	♀	
Nelson	1589	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1592	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1591	Santa Yñez Mission	Dec. 4, 1891	♀	
Nelson	1590	Santa Yñez Mission	Dec. 4, 1891	♂	
Palmer	285	Three Rivers	July 29, 1891	♂	
Nelson	1684	Ventura River, near to	Dec. 21, 1891	♀	
Nelson	1706	Ventura River, near to	Dec. 23, 1891	♂	

Reithrodontomys megalotis megalotis
Reithrodontomys megalotis megalotis

The Desert Harvest Mouse was collected at a wide array of locations in Nevada and California. For the sake of brevity in the table below, only two of the 31 collections made at Ash Meadows, two of 32 collections at Lone Pine, two of 20 at Olancha, and two of 16 collections from the lower end of Oasis Valley are presented.

In Nevada, this taxon was collected at Ash Meadows, Corn Creek, the Las Vegas Ranch, the southern end of Oasis Valley, Pahranagat Valley, Pahrump Valley, six miles west of Panaca, and Wood Cañon in the Grapevine Mountains.

In California, this animal was collected at Alvord, Ash Creek, Benton, Benton Station, Bishop Creek, six miles north of Bishop, Cartago, Cottonwood Cañon in the Panamint Mountains, Emigrant Spring, Furnace Creek, the Grapevine Mountains, Grapevine Ranch and Spring, the Hot Springs in Panamint Valley, Johnson Cañon, Keeler, Lone Pine, Medbury Spring, Olancha, the mining town of Panamint, Pruit's Ranch, Resting Springs, Saratoga Springs, Searles' Garden in the Argus Mountains, Shepherd Cañon, Twelve Mile Spring, and the head of Willow Creek in the Panamint Mountains.

The Desert Harvest Mouse was very numerous in the salt grass at the edge of Owens Lake, north up the Owens Valley, and up to 6,000 feet from the base of Sierras. They fairly swarm around fields and meadows among the ranches on the west side of that valley, where they filled traps so little else could be caught. Several were caught in the bottom of Panamint Valley in mesquite near the salt flat. They were collected in grass around the pond at Saratoga Springs, but none were found down in adjoining parts of the lower portion of Death Valley. At Resting Springs and Medbury Spring, they live in thick grass and weeds around meadows and fields. They were not common at Grapevine Spring or Grapevine Ranch. They were abundant in the alfalfa and sagebrush at Olancha. They were not common at Bishop or Benton Creek. They were found rather sparingly in weedy places about Pahrump Ranch. At the southern end of Oasis Valley, they were abundant in the willows and sacaton.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	650	Alvord	June 26, 1891	♀	
Stephens	649	Alvord	June 26, 1891	♀	
Stephens	651	Alvord	June 26, 1891	♂	
Stephens	652	Alvord	June 26, 1891	♂	
Stephens	659	Alvord	June 27, 1891	♀	
Stephens	537	Ash Creek	May 30, 1891	♂	
Stephens	538	Ash Creek	May 30, 1891	♂	
Fisher	428	Ash Meadows	Mar. 19, 1891	♂	
Stephens	61	Ash Meadows	Feb. 28, 1891	♀	
Stephens	707	Benton	July 10, 1891	♂	
Stephens	740	Benton Station	July 17, 1891	♂	
Stephens	813	Bishop Creek	Aug. 9, 1891	♀	
Stephens	797	Bishop, 6 miles north of	Aug. 3, 1891	♂	
Stephens	614	Cartago	June 10, 1891	♂	
Stephens	617	Cartago	June 11, 1891	♂	
Stephens	615	Cartago	June 10, 1891	♂	
Stephens	584	Cartago	June 4, 1891	♂	
Stephens	583	Cartago	June 4, 1891	♂	
Stephens	582	Cartago	June 4, 1891	♂	
Stephens	581	Cartago	June 4, 1891	♀	
Stephens	580	Cartago	June 4, 1891	♀	
Stephens	579	Cartago	June 4, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	616	Cartago	June 10, 1891	♂	
Bailey	2624	Corn Creek	Mar. 15, 1891	♀	
Nelson	919	Cottonwood Cañon, Panamint Mountains	May 27, 1891	♂	
Stephens	284	Emigrant Spring	Apr. 15, 1891	♂	
Fisher	134	Furnace Creek	Feb. 3, 1891	♀	
Bailey	2959	Furnace Creek	June 20, 1891	♂	
Bailey	2960	Furnace Creek	June 20, 1891	♀	
Fisher	133	Furnace Creek	Feb. 3, 1891	♂	
Stephens	267	Furnace Creek	Apr. 9, 1891	♀	
Fisher	127	Furnace Creek	Feb. 2, 1891	♂	
Stephens	182	Grapevine Mountains	Mar. 22, 1891	♂	
Stephens	247	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	248	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	229	Grapevine Spring	Apr. 2, 1891	♀	
Stephens	241	Grapevine Spring	Apr. 3, 1891	♀	
Nelson	247	Hot Springs, Panamint Valley	Jan. 10, 1891	♂	
Bailey	2359	Hot Springs, Panamint Valley, near to	Jan. 8, 1891	♂	
Fisher	505	Johnson Cañon	Apr. 5, 1891	♂	
Nelson	38	Keeler	Dec. 5, 1890	♂	
Nelson	55	Keeler	Dec. 10, 1890	♀	
Nelson	39	Keeler	Dec. 5, 1890	♂	
Nelson	49	Keeler	Dec. 8, 1890	♂	
Bailey	2611	Las Vegas Ranch	Mar. 13, 1891	♂	
Bailey	2583	Las Vegas Ranch	Mar. 11, 1891	♀	
Bailey	2582	Las Vegas Ranch	Mar. 11, 1891	♀	
Bailey	2598	Las Vegas Ranch	Mar. 12, 1891	♂	
Nelson	63	Lone Pine	Dec. 12, 1890	♀, imm	
Fisher	678	Lone Pine	June 9, 1891	♂	
Bailey	2543	Medbury Spring	Feb. 28, 1891	♂	
Stephens	165	Oasis Valley, lower end	Mar. 18, 1891	♂	
Stephens	138	Oasis Valley, lower end	Mar. 15, 1891	♀	
Stephens	509	Olancha	May 22, 1891	♂	
Stephens	626	Olancha	June 14, 1891	♂	
Bailey	2864	Pahranagat Valley	May 26, 1891	♂	
Bailey	2865	Pahranagat Valley	May 26, 1891	♂	
Bailey	2846	Pahranagat Valley	May 24, 1891	♂	
Bailey	2845	Pahranagat Valley	May 24, 1891	♂	
Nelson	562	Pahrump Valley	Feb. 28, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	592	Pahrump Valley	Mar. 4, 1891	♂	
Nelson	601	Pahrump Valley	Mar. 6, 1891	♂	
Nelson	515	Pahrump Valley	Feb. 21, 1891	♂	
Nelson	514	Pahrump Valley	Feb. 21, 1891	♂	
Nelson	488	Pahrump Valley	Feb. 19, 1891	♀	
Nelson	487	Pahrump Valley	Feb. 19, 1891	♀	
Nelson	486	Pahrump Valley	Feb. 19, 1891	♂	
Nelson	468	Pahrump Valley	Feb. 17, 1891	♂	
Nelson	459	Pahrump Valley	Feb. 17, 1891	♂	
Nelson	513	Pahrump Valley	Feb. 21, 1891	♂	
Bailey	2814	Panaca, 6 miles west of	May 20, 1891	♂	
Fisher	536	Panamint	Apr. 13, 1891	♂	
Bailey	3032	Pruit's Ranch	Jul. 9, 1891	♂	
Nelson	398	Resting Springs	Feb. 9, 1891	♂	
Fisher	222	Resting Springs	Feb. 18, 1891	♂	
Fisher	209	Resting Springs	Feb. 17, 1891	♂	
Bailey	2435	Saratoga Springs	Feb. 1, 1891	♂	
Bailey	2436	Saratoga Springs	Feb. 1, 1891	♂	
Bailey	2437	Saratoga Springs	Feb. 2, 1891	♀	
Stephens	342	Searles' Garden	Apr. 25, 1891	♀	
Nelson	191	Shepherd Cañon	Jan. 3, 1891	♀	
Nelson	418	Twelve Mile Spring	Feb. 11, 1891	♀	
Nelson	830	Willow Creek, Panamint Mountains, head of	May 8, 1891	♂	
Nelson	822	Willow Creek, Panamint Mountains, head of	May 7, 1891	♂	
Nelson	823	Willow Creek, Panamint Mountains, head of	May 7, 1891	♂	
Nelson	968	Wood Cañon	June 9, 1891	♀	

Peromyscus maniculatus gambeli
Peromyscus maniculatus gambelii

The Gambel White-footed Mouse was collected at 26 locations in California as identified in the table below, and they occurred at low and high elevation localities. These locations included Auburn where they seemed scarce, Carpinteria, Gaviota Pass, Halstead Meadows, Horse Corral Meadows, two locations along the East Fork of the Kaweah River, La Panza, near the head of the Merced River, Mineral King, at Monterey where it was common everywhere, at and near Morro, near Nordhoff, at Pozo, near the head of the San Joaquin River, at San Luis Obispo and 12 miles west of there, near San Simeon, along the Santa Maria River, at Santa Paula, at Santa Yñez Mission, Three Rivers, near the Ventura River, at Wawona, and in Yosemite Valley.

This taxon was not numerous at Carpinteria, near the Ventura River, or at Santa Paula.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3432	Auburn	Oct. 21, 1891	♀	
Bailey	3433	Auburn	Oct. 21, 1891	♂	
Nelson	1665	Carpinteria	Dec. 19, 1891	♀	
Nelson	1659	Carpinteria	Dec. 19, 1891	♀	
Nelson	1617	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1614	Gaviota Pass	Dec. 9, 1891	♂	
Nelson	1615	Gaviota Pass	Dec. 9, 1891	♀	
Palmer	302	Halsted Meadows	Aug. 5, 1891	♂	
Palmer	307	Halsted Meadows	Aug. 6, 1891	♀	
Palmer	306	Halsted Meadows	Aug. 6, 1891	♀	
Palmer	301	Halsted Meadows	Aug. 5, 1891	♂	
Fisher	882	Halsted Meadows	Aug. 8, 1891	♂, ad	
Palmer	303	Halsted Meadows	Aug. 5, 1891	♂	
Fisher	835	Halsted Meadows	Aug. 3, 1891	♂, ad	
Fisher	857	Halsted Meadows	Aug. 5, 1891	♂	
Fisher	866	Halsted Meadows	Aug. 6, 1891	♂, ad	
Fisher	858	Halsted Meadows	Aug. 5, 1891	♂	
Fisher	841	Halsted Meadows	Aug. 4, 1891	♂	
Fisher	856	Halsted Meadows	Aug. 5, 1891	♂	
Fisher	855	Halsted Meadows	Aug. 5, 1891	♂, imm	
Fisher	842	Halsted Meadows	Aug. 4, 1891	♂	
Fisher	905	Horse Corral Meadows	Aug. 11, 1891	♀, ad	
Bailey	3185	Kaweah River, East Fork, Mineral King	Aug. 6, 1891	♂	
Bailey	3112	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀	
Bailey	3113	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀	
Bailey	3111	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♂	
Bailey	3124	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♀	
Bailey	3125	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♂	
Nelson	1388	La Panza	Oct. 28, 1891	♂	
Nelson	1389	La Panza	Oct. 28, 1891	♂	
Nelson	1201	Merced River, near head	Aug. 4, 1891	♂	
Bailey	3140	Mineral King	July 31, 1891	♂	
Bailey	3142	Mineral King	July 31, 1891	♀, imm	
Bailey	3141	Mineral King	July 31, 1891	♂	
Bailey	3328	Monterey	Sept. 30, 1891	♂	
Bailey	3323	Monterey	Sept. 30, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3327	Monterey	Sept. 30, 1891	♀	
Bailey	3326	Monterey	Sept. 30, 1891	♀	
Bailey	3325	Monterey	Sept. 30, 1891	♀	
Bailey	3324	Monterey	Sept. 30, 1891	♀	
Nelson	1439	Morro	Nov. 7, 1891	♂	
Nelson	1441	Morro	Nov. 7, 1891	♂	
Nelson	1440	Morro	Nov. 7, 1891	♂	
Nelson	1442	Morro	Nov. 7, 1891	♂	
Nelson	1431	Morro Rock, near to	Nov. 6, 1891	♀	
Nelson	1430	Morro Rock, near to	Nov. 6, 1891	♂	
Nelson	1429	Morro Rock, near to	Nov. 6, 1891	♂	
Nelson	1716	Nordhoff, near to	Dec. 24, 1891	♀	
Nelson	1715	Nordhoff, near to	Dec. 24, 1891	♂	
Nelson	1421	Pozo	Nov. 1, 1891	♂	
Stephens	783	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1172	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1426	San Luis Obispo	Nov. 5, 1891	♂	
Nelson	1425	San Luis Obispo	Nov. 5, 1891	♂	
Nelson	1427	San Luis Obispo	Nov. 5, 1891	♂	
Nelson	1428	San Luis Obispo	Nov. 5, 1891	♂	
Nelson	1536	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1533	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	
Nelson	1535	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	
Nelson	1537	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1543	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1561	San Luis Obispo, 12 miles west of	Nov. 29, 1891	♂	
Nelson	1534	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	
Nelson	1473	San Simeon, near to	Nov. 14, 1891	♂	
Nelson	1474	San Simeon, near to	Nov. 14, 1891	♀	
Nelson	1517	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1516	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1515	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1514	San Simeon, near to	Nov. 22, 1891	♀	
Nelson	1513	San Simeon, near to	Nov. 22, 1891	♂	
Nelson	1572	Santa Maria River	Dec. 2, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1573	Santa Maria River	Dec. 2, 1891	♀	
Nelson	1571	Santa Maria River	Dec. 2, 1891	♂	
Nelson	1779	Santa Paula	Jan. 3, 1892	♂	
Nelson	1752	Santa Paula	Dec. 29, 1891	♂	
Fisher	831	Three Rivers	July 29, 1891	♂, ad	
Nelson	1593	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1594	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1595	Santa Yñez Mission	Dec. 4, 1891	♀	
Fisher	830	Three Rivers	July 29, 1891	♂, ad	
Fisher	829	Three Rivers	July 29, 1891	♂, ad	
Fisher	979	Three Rivers	Sept. 15, 1891	♂	
Bailey	3268	Three Rivers	Sept. 15, 1891	♂	
Bailey	3269	Three Rivers	Sept. 16, 1891	♀	
Nelson	1711	Ventura River, near to	Dec. 23, 1891	♀	
Nelson	1710	Ventura River, near to	Dec. 23, 1891	♂	
Nelson	1683	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1233	Wawona	Aug. 12, 1891	♂	
Nelson	1232	Wawona	Aug. 12, 1891	♂	
Nelson	1220	Yosemite Valley	Aug. 8, 1891	♂	
Nelson	1217	Yosemite Valley	Aug. 8, 1891	♂	
Nelson	1206	Yosemite Valley	Aug. 6, 1891	♀	
Nelson	1205	Yosemite Valley	Aug. 6, 1891	♂	

Peromyscus maniculatus sonoriensis
Peromyscus maniculatus sonoriensis

The Death Valley Expedition biologists collected more Sonora White-footed Mouse specimens than any other mammal taxon during their fieldwork. A total of 396 of these mice were collected during the Expedition. For the sake of brevity, a table identifying those collections is not provided below. Instead, the collection locations are identified below and the number of collections at each locality is quantified in parentheses.

In Utah, this mouse was collected at Saint George (4), and on Santa Clara Creek 20 miles above Saint George (1).

In Nevada, it was collected at Ash Meadows (11), the east slope of the Charleston Mountains (1), Charleston Peak (9), Corn Creek (6), at Indian Creek two miles above its junction with Reese River (1), at Indian Queen where they were very abundant (2), Indian Queen Mine where they were very abundant (2), Las Vegas Ranch (1), in the Las Vegas Valley where they were common (4), Mount Magruder (3), Mountain Springs (1), the lower end of Oasis Valley (4), Pahranagat Valley (4), in Pahrump Valley where surprisingly only one specimen was taken (1), Reese River at the Lander–Nye County line where Mr. Bailey found them every place he trapped (17), Thorpe Mill (2), and Wood Cañon in the Grapevine Mountains where they became more numerous as the mountains were ascended until, in the piñon belt, they became extremely abundant (9).

In California, the Sonora White-footed Mouse was collected at 20 Mile Spring (1), Adobe Station (2), Alabama Hills (4), Alvord (30), Ash Creek (19), Bakersfield (1), Bennett Wells (8), Benton (1), Big Cottonwood Meadows (25), Bishop Creek (3), Boundary Cañon (2), Cartago (2), the charcoal kilns near Wildrose Cañon (3), Coso (32), Cottonwood Cañon in the Panamint Mountains (5), Cottonwood Creek in the Panamint Mountains (1), Deep Spring–Owens Valley Pass (2), Fish Slough (4), Fort Tejon (8), Furnace Creek (3), Granite Springs (3), Grapevine Mountains (19), Grapevine Spring (1), Haiwee Meadows (5), 3 miles northeast of Hesperia (1), Hot Springs Valley (1), the Hot Springs in Panamint Valley (7), Hot Springs, Panamint Valley, near to (1), Independence Creek (1), Waucoba Mountain in the Inyo Mountains (2), Johnson Cañon (15), Keeler (6), Little Lake (3), Lone Pine (12), Mammoth (2), Maturango Spring (4), Mesquite Well, near to (1), Monache Meadows (3), Moran's ranch (2), Olancha (11), Olancha Peak (1), 5 miles southwest of Olancha (6), the town of Panamint (1), Panamint Valley (1), Perognathus Flat (1), Pine City (1), Pruit's Ranch (19), Reche Cañon (3), Resting Springs (2), San Emigdio (6), the head of San Emigdio Cañon (4), Saratoga Springs (7), Shepherd Cañon (2), Surprise Cañon (7), 8 miles west of Tejon Pass (2), the northwest base of Telescope Peak (4), Triangle Spring (1), Walker Basin (3), the east slope of Walker Pass (2), Willow Creek in the Panamint Mountains (3), and at the head of Willow Creek in the Panamint Mountains (8).

This mouse was common in Owens Valley about Lone Pine and they fairly swarmed in the sagebrush between the Alabama Hills and Sierra Nevada near Lone Pine. They were common in the Inyo Mountains near Lone Pine but not so numerous at the town. These mice were common in the mesquite about the Hot Springs in Panamint Valley and in Surprise Cañon up to about 3,000 feet. At Monache Meadows and Big Cottonwood Meadows, they were rather common, and they were abundant at Ash Creek. They were found to be abundant from the bottom of Saline and Owens valleys to the tops of the highest summits in the Inyo Mountains. This taxon was found wherever it was trapped for in the Panamint and Grapevine mountains. They were rather common around Bakersfield. At Mammoth they were extremely abundant from the vicinity of 9,500 feet down to 3,500 feet at least in the foothills, and were so abundant as to become a pest in most places. At Fort Tejon, they were very abundant everywhere under logs and in the old buildings. The taxon was very abundant in the old buildings at Coso. They were abundant at Fish Slough, Bishop Creek, and Reche Cañon.

Peromyscus boylei
Peromyscus boylii boylii

The Boyle White-footed Mouse was collected on the Middle Fork of the American River and at Auburn by Mr. Bailey. At the latter location, it was rather common especially among rocks.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3449	American River, Middle Fork, 3 miles from Auburn	Oct. 24, 1891	♂	
Bailey	3448	American River, Middle Fork, 3 miles from Auburn	Oct. 24, 1891	♂	
Bailey	3447	American River, Middle Fork, 3 miles from Auburn	Oct. 24, 1891	♀, imm	
Bailey	3446	American River, Middle Fork, 3 miles from Auburn	Oct. 24, 1891	♀, imm	
Bailey	3445	American River, Middle Fork, 3 miles from Auburn	Oct. 24, 1891	♀, imm	
Bailey	3444	American River, Middle Fork, 3 miles from Auburn	Oct. 23, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3427	Auburn	Oct. 20, 1891	♀	
Bailey	3426	Auburn	Oct. 20, 1891	♀	
Bailey	3425	Auburn	Oct. 20, 1891	♂	
Bailey	3424	Auburn	Oct. 20, 1891	♂	

Peromyscus boylei rowleyi
Peromyscus boylii rowleyi

In Utah, the Rowley White-footed Mouse was collected on Santa Clara Creek 20 miles upstream from Saint George, and in Nevada, this mouse was only captured on Charleston Peak where five were collected.

In California, and for the sake of brevity, only one of the 14 specimens from the South Fork of the Kern River 25 miles from Kernville, one of the 15 specimens five miles southwest of Olancha, one of the seven mice from the mountains near San Simeon, and one of the 14 specimens from near the Ventura River are provided in the table below. In that state, the taxon was collected at the Alabama Hills, Carpinteria, Gaviota Pass, Independence Creek, the East Fork of the Kaweah River between Three Rivers and Mineral King, at Kern River Lakes, near Nordhoff, on Olancha Creek near the mouth of its cañon, five miles southwest of Olancha, at Pozo, Pruit's Ranch, the head of San Emigdio Cañon, in the mountains near San Simeon, Santa Paula, Santa Yñez Mission, eight miles west of Tejon Pass, Three Rivers, near the Ventura River, and on the west slope of Walker Pass.

While the Rowley White-footed Mouse was common among rocks and brush through Lone Pine Creek Cañon in the Alabama Hills, Mr. Nelson trapped several days in another cañon in the Alabama Hills without finding them there, and Mr. Bailey failed to find them in the Inyo Mountains. Bailey did find them to be common among rocks west of Walker Pass at 4,500 feet.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	132	Alabama Hills	Dec. 22, 1890	♂	
Nelson	133	Alabama Hills	Dec. 22, 1890	♂	
Nelson	134	Alabama Hills	Dec. 22, 1890	♀	
Bailey	2277	Alabama Hills	Dec. 17, 1890	♂	
Bailey	2276	Alabama Hills	Dec. 17, 1890	♂	
Nelson	151	Alabama Hills	Dec. 24, 1890	♀	
Bailey	2279	Alabama Hills	Dec. 17, 1890	♀	
Bailey	2288	Alabama Hills	Dec. 18, 1890	♀	
Bailey	2290	Alabama Hills	Dec. 18, 1890	♂	
Bailey	2289	Alabama Hills	Dec. 18, 1890	♀	
Bailey	2292	Alabama Hills	Dec. 18, 1890	♂	
Bailey	2278	Alabama Hills	Dec. 17, 1890	♀	
Nelson	1663	Carpinteria	Dec. 19, 1891	♀	
Nelson	1662	Carpinteria	Dec. 19, 1891	♀	
Nelson	454	Charleston Peak	Feb. 14, 1891	♂	
Nelson	455	Charleston Peak	Feb. 14, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	456	Charleston Peak	Feb. 14, 1891	♀	
Nelson	457	Charleston Peak	Feb. 14, 1891	♀	
Nelson	453	Charleston Peak	Feb. 14, 1891	♂	
Nelson	1621	Gaviota Pass	Dec. 9, 1891	♂	
Nelson	1618	Gaviota Pass	Dec. 9, 1891	♂	
Nelson	1622	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1620	Gaviota Pass	Dec. 9, 1891	♂	
Nelson	1634	Gaviota Pass	Dec. 10, 1891	♀	
Nelson	1633	Gaviota Pass	Dec. 10, 1891	♂	
Nelson	1626	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1625	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1624	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1623	Gaviota Pass	Dec. 9, 1891	♀	
Stephens	631	Independence Creek	June 19, 1891	♀	
Stephens	632	Independence Creek	June 19, 1891	♀	
Bailey	3114	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♂	
Fisher	948	Kern River Lakes	Sept. 6, 1891	♀	
Nelson	1730	Nordhoff, near to	Dec. 25, 1891	♀	
Nelson	1729	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1718	Nordhoff, near to	Dec. 24, 1891	♀	
Nelson	1719	Nordhoff, near to	Dec. 24, 1891	♀	
Nelson	1728	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1717	Nordhoff, near to	Dec. 24, 1891	♂	
Stephens	517	Olancha Creek, mouth of cañon	May 24, 1891	♀	
Stephens	516	Olancha Creek, mouth of cañon	May 24, 1891	♀	
Stephens	587	Olancha, 5 miles southwest of	June 6, 1891	♀	
Nelson	1403	Pozo	Oct. 30, 1891	♂	
Nelson	1409	Pozo	Oct. 30, 1891	♀	
Nelson	1405	Pozo	Oct. 30, 1891	♂	
Nelson	1402	Pozo	Oct. 30, 1891	♂	
Nelson	1401	Pozo	Oct. 30, 1891	♂	
Nelson	1400	Pozo	Oct. 30, 1891	♂	
Nelson	1392	Pozo	Oct. 29, 1891	♀	
Nelson	1391	Pozo	Oct. 29, 1891	♂	
Nelson	1407	Pozo	Oct. 30, 1891	♀	
Bailey	3016	Pruit's Ranch	July 7, 1891	♂, ad	
Nelson	1334	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1318	San Emigdio Cañon, head of	Oct. 17, 1891	♀	
Nelson	1317	San Emigdio Cañon, head of	Oct. 17, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1493	San Simeon, mountains near to	Nov. 17, 1891	♀	
Bailey	2807	Santa Clara Creek, 20 miles above Saint George	May 17, 1891	♀	
Bailey	2808	Santa Clara Creek, 20 miles above Saint George	May 17, 1891	♂, imm	
Nelson	1780	Santa Paula	Jan. 3, 1892	♂	
Nelson	1588	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1587	Santa Yñez Mission	Dec. 4, 1891	♀	
Nelson	1586	Santa Yñez Mission	Dec. 4, 1891	♀	
Nelson	1585	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1584	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1583	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1582	Santa Yñez Mission	Dec. 4, 1891	♂	
Nelson	1308	Tejon Pass, 8 miles west of	Oct. 16, 1891	♂	
Palmer	284	Three Rivers	July 29, 1891	♂	
Bailey	3267	Three Rivers	Sept. 15, 1891	♂	
Bailey	3265	Three Rivers	Sept. 15, 1891	♀	
Bailey	3264	Three Rivers	Sept. 15, 1891	♀	
Palmer	282	Three Rivers	July 28, 1891	♀	
Fisher	827	Three Rivers	July 29, 1891	♂, ad	
Fisher	978	Three Rivers	Sept. 15, 1891	♂	
Bailey	3270	Three Rivers	Sept. 16, 1891	♀	
Palmer	283	Three Rivers	July 28, 1891	♂	
Bailey	3266	Three Rivers	Sept. 15, 1891	♀	
Fisher	828	Three Rivers	July 29, 1891	♂, ad	
Nelson	1673	Ventura River, near to	Dec. 21, 1891	♀	
Bailey	2982	Walker Pass, west slope	July 3, 1891	♀, imm	
Bailey	2981	Walker Pass, west slope	July 3, 1891	♂	

Peromyscus truei
Peromyscus truei truei (41), *P. truei montipinoris* (8)

The True White-footed Mouse was collected in Utah, Nevada, and California. In Utah it was collected at Saint George.

In Nevada it was collected on Charleston Peak, at Mountain Springs where they were caught among rocks in the lower part of cedar belt, Sheep Spring east of Panaca, and in Wood Cañon in the piñon belt in the Grapevine Mountains.

In California, this mouse was collected at several locations. For the sake of brevity, only one of the 23 collections from Johnson Cañon is identified in the table below. This taxon was collected in that state at the Alabama Hills where they were common among rocks and brush in Lone Pine Creek Cañon, Coso, the Deep

Spring–Owens Valley Pass, in the Inyo Mountains at Waucoba Mountain where they were found in the piñon belt, Johnson Cañon, Pruit's Ranch where they were common among rocks, the northwest base of Telescope Peak, and the west slope of Walker Pass at 4,500 feet.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2291	Alabama Hills	Dec. 18, 1890	♂	
Nelson	452	Charleston Peak	Feb. 14, 1891	♂	
Nelson	451	Charleston Peak	Feb. 14, 1891	♂	
Palmer	183	Coso	May 28, 1891	♀	
Bailey	2944	Deep Springs–Owens Valley Pass	June 10, 1891	♀, ad	
Nelson	1021	Inyo Mountains, Waucoba Mountain	July 1, 1891	♀	
Nelson	754	Johnson Cañon	Apr. 8, 1891	♀	
Bailey	2552	Mountain Springs	Mar. 7, 1891	♂	
Bailey	2553	Mountain Springs	Mar. 7, 1891	♂	
Nelson	606	Mountain Springs	Mar. 7, 1891	♀	
Nelson	605	Mountain Springs	Mar. 7, 1891	♂	
Nelson	604	Mountain Springs	Mar. 7, 1891	♂	
Nelson	603	Mountain Springs	Mar. 7, 1891	♂	
Bailey	2812	Sheep Spring	May 19, 1891	♂	
Bailey	3020	Pruit's Ranch	July 7, 1891	♀	
Fisher	751	Pruit's Ranch	July 7, 1891	♀	
Bailey	2795	Saint George	May 15, 1891	♀, ad	
Bailey	2689	Telescope Peak, northwest base	Apr. 17, 1891	♀, ad	
Bailey	2688	Telescope Peak, northwest base	Apr. 17, 1891	♂, ad	
Bailey	2980	Walker Pass, west slope	July 3, 1891	♂	
Fisher	719	Walker Pass, west slope	July 3, 1891	♀	
Fisher	720	Walker Pass, west slope	July 3, 1891	♀	
Fisher	721	Walker Pass, west slope	July 3, 1891	♀	
Fisher	722	Walker Pass, west slope	July 3, 1891	♂	
Fisher	723	Walker Pass, west slope	July 3, 1891	♂	
Nelson	962	Wood Cañon	June 9, 1891	♂	
Nelson	963	Wood Cañon	June 9, 1891	♂	

Peromyscus truei gilberti
Peromyscus truei gilberti (11), *P. truei dyselius* (6)

The Gilbert White-footed Mouse was captured at Boulder Creek, Gaviota Pass, the East Fork of the Kaweah River where two specimens were taken at an old house just below the edge of pines at 5,500 feet, La Panza, at Monterey where they were common in the woods around old logs and in *Neotoma* nests, Pozo, and in the mountains near San Simeon.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3416	Boulder Creek	Oct. 15, 1891	♂	
Bailey	3406	Boulder Creek	Oct. 14, 1891	♂, imm	
Bailey	3404	Boulder Creek	Oct. 14, 1891	♂	
Bailey	3396	Boulder Creek	Oct. 13, 1891	♂	
Bailey	3395	Boulder Creek	Oct. 13, 1891	♂	
Bailey	3417	Boulder Creek	Oct. 15, 1891	♀	
Nelson	1619	Gaviota Pass	Dec. 9, 1891	♂	
Bailey	3123	Kaweah River, East Fork, Three Rivers to Mineral King	July 29, 1891	♀, ad	
Nelson	1387	La Panza	Oct. 28, 1891	♀	
Bailey	3368	Monterey	Oct. 3, 1891	♂	
Bailey	3321	Monterey	Sept. 30, 1891	♂	
Bailey	3358	Monterey	Oct. 2, 1891	♂	
Bailey	3369	Monterey	Oct. 5, 1891	♂	
Bailey	3322	Monterey	Sept. 30, 1891	♂	
Nelson	1404	Pozo	Oct. 30, 1891	♂	
Nelson	1508	San Simeon, mountains near to	Nov. 19, 1891	♀	
Nelson	1480	San Simeon, mountains near to	Nov. 16, 1891	♂	

Peromyscus crinitus
Peromyscus crinitus crinitus

Mr. Bailey captured one male Canyon Mouse (Bailey catalog # 2087) among the rocks at Silver Creek 15 miles north of Austin on November 8.

Peromyscus crinitus stephensi
Peromyscus crinitus stephensi

The Death Valley Expedition biologists collectively captured a total of 331 Stephens Canyon Mice during that expedition, making this the third most commonly captured mammal during their fieldwork. For the sake of brevity, a table identifying those collections is not provided below. Instead, the collection locations are identified below and the number of collections at each locality is quantified in parentheses.

In Utah, these mice were collected at Saint George (9).

In Nevada, they were collected at Ash Meadows (2), Cave Camp in the Pahrump Valley (6), the east slope of the Charleston Mountains (1), Charleston Peak (4), the Colorado River (2), Cottonwood Springs in the southwestern portion of the Las Vegas Valley where all of them were found among rocks and none were found in the open part of Las Vegas Valley (4), Gold Mountain (2), Mountain Springs (7), Pahroc Spring (2), the southwest side of Pahrump Valley (1), the west side of the Pahrump Valley (8) which includes three that were caught close to the spring at Pahrump Ranch under a mesquite tree and one on the border of an old field, and Thorpe Mill (8).

In California, the Stephens Canyon Mouse were collected at 20 Mile Spring (5), the Alabama Hills (24), Benton (1), Boundary Cañon (2), Coso (2), the Cottonwood Cañon in the Panamint Mountains (8), the south end of Death Valley (1), the Deep Spring–Owens Valley Pass (1), Emigrant Spring (12), Funeral Mountains (2), Furnace Creek (1), Granite Springs (5), Grapevine Mountains (10), Independence Creek (2), mouth of Indian Joe Cañon (3) where they were abundant, Johnson Cañon (58), Little Lake (7), Lone Pine (1), Lone Willow Spring (17), Long Valley in Inyo County (1), Maturango Spring (15), Medbury Spring (2), Mesquite Spring in the Funeral Mountains (15), Moran's ranch (1), 3 miles west of Olancha (4), the town of Panamint (15), Resting Springs where they were common in the rocks on a low mountain near the springs and 800 to 900 feet above the springs (9), Saratoga Springs (17), Searles' Garden (9) where they were abundant, Shepherd Cañon (3), Surprise Cañon (13), the northwest base of Telescope Peak (6), Twelve Mile Spring (4), and the head of Willow Creek in the Panamint Mountains (1).

Peromyscus californicus
Peromyscus californicus californicus

With the exception of collections at Fort Tejon, where one was caught on July 8 in an old *Neotoma* nest a mile up the cañon back of the fort and at Pozo, the Parasitic Mouse was only collected in California in its coastal counties. It was collected at Boulder Creek where it was rather common through the woods and seemed to be scattered through brush and thick places, at Carpinteria where it was common where ever it was trapped for in heavy brush, Fort Tejon, at Gaviota Pass, Monterey where it was quite common in old deserted *Neotoma* houses, near Nordhoff, Pozo, 12 miles west of San Luis Obispo, near San Simeon, in the mountains near San Simeon, near Santa Barbara, at Santa Paula, and near the Ventura River where it was common.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3415	Boulder Creek	Oct. 15, 1891	♂	
Bailey	3403	Boulder Creek	Oct. 14, 1891	♂	
Bailey	3402	Boulder Creek	Oct. 14, 1891	♂	
Bailey	3401	Boulder Creek	Oct. 14, 1891	♀	
Bailey	3394	Boulder Creek	Oct. 13, 1891	♀	
Nelson	1660	Carpinteria	Dec. 19, 1891	♂	
Palmer	262	Fort Tejon	July 8, 1891	♂	
Nelson	1635	Gaviota Pass	Dec. 10, 1891	♀	
Nelson	1632	Gaviota Pass	Dec. 10, 1891	♀	
Bailey	3344	Monterey	Oct. 1, 1891	♀	
Bailey	3345	Monterey	Oct. 1, 1891	♀	
Bailey	3346	Monterey	Oct. 1, 1891	♂	
Bailey	3381	Monterey	Oct. 7, 1891	♂	
Bailey	3382	Monterey	Oct. 7, 1891	♀	
Bailey	3383	Monterey	Oct. 7, 1891	♀	
Bailey	3384	Monterey	Oct. 8, 1891	♂	
Bailey	3320	Monterey	Sept. 30, 1891	♂	
Nelson	1727	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1408	Pozo	Oct. 30, 1891	♀	
Nelson	1530	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1531	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♂	
Nelson	1532	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1541	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1556	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1498	San Simeon, mountains near to	Nov. 18, 1891	♂	
Nelson	1507	San Simeon, mountains near to	Nov. 19, 1891	♀	
Nelson	1471	San Simeon, near to	Nov. 14, 1891	♂	
Nelson	1472	San Simeon, near to	Nov. 14, 1891	♀	
Nelson	1645	Santa Barbara, near to	Dec. 12, 1891	♀	
Nelson	1748	Santa Paula	Dec. 28, 1891	♂	
Nelson	1747	Santa Paula	Dec. 28, 1891	♂	
Nelson	1778	Santa Paula	Jan. 3, 1892	♀	
Nelson	1777	Santa Paula	Jan. 3, 1892	♀	
Nelson	1776	Santa Paula	Jan. 3, 1892	♂	
Nelson	1775	Santa Paula	Jan. 2, 1892	♀	
Nelson	1773	Santa Paula	Jan. 2, 1892	♂	
Nelson	1762	Santa Paula	Dec. 30, 1891	♀	
Nelson	1746	Santa Paula	Dec. 28, 1891	♀	
Nelson	1749	Santa Paula	Dec. 28, 1891	♂	
Nelson	1751	Santa Paula	Dec. 29, 1891	♀	
Nelson	1679	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1699	Ventura River, near to	Dec. 22, 1891	♀	
Nelson	1698	Ventura River, near to	Dec. 22, 1891	♂	
Nelson	1681	Ventura River, near to	Dec. 21, 1891	♀	
Nelson	1680	Ventura River, near to	Dec. 21, 1891	♀	
Nelson	1677	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1678	Ventura River, near to	Dec. 21, 1891	♂	

Peromyscus eremicus
Peromyscus eremicus eremicus

For the sake of brevity, only two of the 29 Desert Mouse specimens from Ash Meadows, two of 25 specimens at or near the Hot Springs in Panamint Valley, two of 23 specimens from the Pahrump Valley area, and two of the 63 specimens from Resting Springs are provided in the table below.

In Arizona, it was collected along the Virgin River seven miles above Bunkerville.

In Utah, this mouse was collected at Saint George.

In Nevada, the Desert Mouse was collected at Ash Meadows, the east slope of the Charleston Mountains, Colorado River, Cottonwood Springs in the Las Vegas Valley, Las Vegas Ranch and in the Las Vegas Valley, and Pahrump Valley.

In California, this taxon was collected at Bennett Wells in Death Valley, Cottonwood Cañon in the Panamint Mountains, at Grapevine Ranch, at and near the Hot Springs in Panamint Valley, at Medbury Spring, Resting Springs, in Surprise Cañon, and at Twelve Mile Spring.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	68	Ash Meadows	Feb. 28, 1891	♂	
Nelson	666	Ash Meadows	Mar. 19, 1891	♂	
Nelson	350	Bennett Wells	Jan. 27, 1891	♂	
Bailey	2420	Bennett Wells	Jan. 23, 1891	♀	
Nelson	347	Bennett Wells	Jan. 26, 1891	♀	
Nelson	626	Charleston Mountains, east slope	Mar. 9, 1891	♀	
Nelson	625	Charleston Mountains, east slope	Mar. 9, 1891	♀	
Nelson	624	Charleston Mountains, east slope	Mar. 9, 1891	♂	
Nelson	636	Colorado River	Mar. 11, 1891	♀	
Nelson	635	Colorado River	Mar. 11, 1891	♂	
Nelson	931	Cottonwood Cañon, Panamint Mountains	May 30, 1891	♀	
Nelson	926	Cottonwood Cañon, Panamint Mountains	May 30, 1891	♂	
Nelson	929	Cottonwood Cañon, Panamint Mountains	May 30, 1891	♀	
Bailey	2555	Cottonwood Springs, Las Vegas Valley	Mar. 8, 1891	♀	
Bailey	2556	Cottonwood Springs, Las Vegas Valley	Mar. 8, 1891	♀	
Bailey	2565	Cottonwood Springs, Las Vegas Valley	Mar. 9, 1891	♂	
Bailey	2566	Cottonwood Springs, Las Vegas Valley	Mar. 9, 1891	♂	
Bailey	2567	Cottonwood Springs, Las Vegas Valley	Mar. 9, 1891	♀, juv	
Stephens	256	Grapevine Ranch	Apr. 4, 1891	♀	
Stephens	255	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	254	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	252	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	253	Grapevine Ranch	Apr. 4, 1891	♀	
Stephens	251	Grapevine Ranch	Apr. 4, 1891	♀	
Stephens	250	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	249	Grapevine Ranch	Apr. 4, 1891	♀	
Nelson	193	Hot Springs, Panamint Valley	Jan. 6, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	255	Hot Springs, Panamint Valley, near to	Jan. 10, 1891	♀	
Bailey	2587	Las Vegas Ranch	Mar. 11, 1891	♂	
Bailey	2585	Las Vegas Ranch	Mar. 11, 1891	♀	
Bailey	2586	Las Vegas Ranch	Mar. 11, 1891	♂	
Bailey	2571	Las Vegas Valley	Mar. 10, 1891	♂	
Bailey	2572	Las Vegas Valley	Mar. 10, 1891	♂	
Bailey	2570	Las Vegas Valley	Mar. 10, 1891	♀	
Bailey	2529	Medbury Spring	Feb. 27, 1891	♀	
Bailey	2530	Medbury Spring	Feb. 27, 1891	♂	
Nelson	593	Pahrump Valley	Mar. 4, 1891	♂	
Nelson	419	Pahrump Valley	Feb. 12, 1891	♂	
Stephens	307	Panamint Valley	Apr. 20, 1891	♂	
Stephens	308	Panamint Valley	Apr. 20, 1891	♂	
Stephens	309	Panamint Valley	Apr. 20, 1891	♂	
Stephens	310	Panamint Valley	Apr. 20, 1891	♂	
Fisher	236	Resting Springs	Feb. 19, 1891	♂	
Nelson	399	Resting Springs	Feb. 9, 1891	♂	
Bailey	2768	Saint George	May 13, 1891	♀	
Bailey	2767	Saint George	May 13, 1891	♀	
Bailey	2764	Saint George	May 13, 1891	♂	
Bailey	2796	Saint George	May 15, 1891	♀, juv	
Bailey	2794	Saint George	May 15, 1891	♀, ad	
Bailey	2375	Surprise Cañon	Jan. 9, 1891	♀	
Bailey	2376	Surprise Cañon	Jan. 9, 1891	♀	
Bailey	2374	Surprise Cañon	Jan. 9, 1891	♀	
Bailey	2373	Surprise Cañon	Jan. 9, 1891	♀	
Bailey	2377	Surprise Cañon	Jan. 9, 1891	♂	
Nelson	417	Twelve Mile Spring	Feb. 11, 1891	♀	
Bailey	2751	Virgin River, 7 miles above Bunkerville	May 9, 1891	♂, ad	
Bailey	2752	Virgin River, 7 miles above Bunkerville	May 9, 1891	♀, ad	

Peromyscus eremicus fraterculus
Peromyscus fraterculus

The *fraterculus* subspecies of *Peromyscus eremicus* was only collected in Reche Cañon. Mr. Stephens collected a total of 7 specimens there on September 22 or 23, and he found it to be common at that locality.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	908	Reche Cañon	Sept. 23, 1891	♀	
Stephens	907	Reche Cañon	Sept. 23, 1891	♀	
Stephens	906	Reche Cañon	Sept. 23, 1891	♀	
Stephens	905	Reche Cañon	Sept. 23, 1891	♂	
Stephens	904	Reche Cañon	Sept. 23, 1891	♂	
Stephens	903	Reche Cañon	Sept. 23, 1891	♂	
Stephens	892	Reche Cañon	Sept. 22, 1891	♂	

Neotoma intermedia
Neotoma bryanti intermedia

Four specimens of the Rhoads Wood Rat were collected by Mr. Nelson at San Luis Obispo. He collected one on November 5, and three more there on November 25. They were found living in the rocks on hills about that town.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1526	San Luis Obispo	Nov. 25, 1891	♂	
Nelson	1525	San Luis Obispo	Nov. 25, 1891	♂	
Nelson	1524	San Luis Obispo	Nov. 25, 1891	♂	
Nelson	1424	San Luis Obispo	Nov. 5, 1891	♂	

Neotoma intermedia gilva
Neotoma bryanti intermedia

Mr. Stephens collected two Yellow Wood Rats at San Gorgonia Pass where they were common. Nelson collected one at San Emigdio.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1359	San Emigdio	Oct. 23, 1891	♀	
Stephens	945	San Gorgonio Pass	Sept. 29, 1891	♀	
Stephens	944	San Gorgonio Pass	Sept. 29, 1891	♂	

Neotoma desertorum
Neotoma lepida lepida

With a total of 193 collections, the Desert Wood Rat was the fifth most commonly collected mammal during the Death Valley Expedition. For the sake of brevity, a table identifying those collections is not provided below. Instead, the collection locations are identified below and the number of collections at each locality is quantified in parentheses. In addition to the collections, a few of the taxon's older nests were likely observed in the southern end of Oasis Valley in Nevada.

In Arizona, this woodrat was collected along the Virgin River seven miles upstream of Bunkerville (4).

In Utah, this animal was collected at Saint George (1).

In the state of Nevada, the Desert Woodrat was collected at Ash Meadows (5), 15 miles north of Ash Meadows (1), at Battle Mountain (3), Blossom Spring near Battle Mountain (4) where they were taken among rocks in the surrounding foot hills, at three locations in the Pahrump Valley (8), on the Colorado River (2) where they were caught in the rocks and sand dune near that river, at Indian Creek two miles above the junction with Reese River (2), at Las Vegas Ranch (1) where they were common everywhere, Mountain Springs (1), on the Reese River at the Lander–Nye County line (1), Silver Creek (1), and Wood Cañon in the Grapevine Mountains (1).

In California, *Neotoma desertorum* was collected at the Alabama Hills (4) were it was abundant all through those hills and up into the Sierras as high as 6550 feet, 10 miles north of the Amargosa Borax works near the Amargosa River (1), at Bennett Wells in Death Valley (22) where they were abundant in the mesquite, Boundary Cañon in the Grapevine Mountains (1), at Coso (24) where they were very abundant about the old adobe buildings, Cottonwood Cañon in the Panamint Mountains (2), Emigrant Spring (1), in the Funeral Mountains (1), Furnace Creek (27), Grapevine Spring (2) where they were common, Haiwee Meadows (1), three or four miles from Hesperia (2), at or near the Hot Springs in Panamint Valley (19), Independence Creek (1), in Johnson Cañon (6), Lone Pine (1), Lone Willow Spring (4), Long Valley in Inyo County (1), Mesquite Spring in the Funeral Mountains (5), in Mesquite Valley (2) which is the northeastern arm of Death Valley and where they ranged from the bottom of the valley up into the Grapevine and Panamint mountains on either side of that valley, at Moran's ranch (3), at the mining town of Panamint (2), in Panamint Valley (1) where they were fairly numerous in mesquite around the edge of the salt flat and built large houses of sticks, stones, and rubbish, at Pruit's Ranch (1), Resting Springs (8), Saline Valley (1), Saratoga Springs (6) where they seem to be relatively small in size, Searles' Garden in the Argus Mountains (3), Shepherd Cañon in those mountains (1), Surprise Cañon (1), Twelve Mile Spring (3), and the east slope of Walker Pass (2) where they were common on both sides of, and at the top of that pass.

Neotoma fuscipes annectens
Neotoma fuscipes annectens

One Portola Wood Rat was collected by Mr. Bailey at Boulder Creek. Old *Neotoma* nests were common through the woods and brush there. The only specimen caught was taken in a trap set on a big log in thick woods.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3393	Boulder Creek	Oct. 13, 1891	♀	

Neotoma fuscipes macrotis
Neotoma macrotis macrotis (18), *N. macrotis luciana* (10)

The Large-eared Wood Rat was collected at Carpinteria where they were common in heavy brush, at Monterey, Morro, near Nordhoff, at Pozo, at Reche Cañon where they were rather common in thick chaparral, 12 miles west of San Luis Obispo, in the mountains near San Simeon and near that town, Santa Paula where they were common, at Santa Yñez Mission, and near the Ventura River where they were also common. Their nests were observed at Gaviota Pass.

At Monterey, they were common and built large houses of sticks under low trees or in brush in the woods; under dwarfed and very thick low pines seemed to be a favorite place for their nests. A great many small pine branches had been cut off and carried into their houses, apparently for nests. Most of their houses have upper stories with holes entering the sides high up and seem to have nests in there, a thing Mr. Bailey had never found

in any other species of *Neotoma*. At Pozo, they were abundant and built great nests of sticks among bushes on hill sides and usually chose the north slopes where the bushes were heaviest.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1652	Carpinteria	Dec. 19, 1891	♀	
Bailey	3380	Monterey	Oct. 7, 1891	♂	
Bailey	3371	Monterey	Oct. 6, 1891	♀	
Bailey	3299	Monterey	Sept. 30, 1891	♀	
Bailey	3298	Monterey	Sept. 30, 1891	♂	
Nelson	1449	Morro	Nov. 9, 1891	♂	
Nelson	1450	Morro	Nov. 9, 1891	♀	
Nelson	1459	Morro	Nov. 10, 1891	♂	
Nelson	1722	Nordhoff, near to	Dec. 25, 1891	♀	
Nelson	1723	Nordhoff, near to	Dec. 25, 1891	♀	
Nelson	1712	Nordhoff, near to	Dec. 24, 1891	♂	
Nelson	1412	Pozo	Oct. 30, 1891	♂	
Nelson	1414	Pozo	Oct. 30, 1891	♀	
Nelson	1413	Pozo	Oct. 30, 1891	♂	
Stephens	896	Reche Cañon	Sept. 23, 1891	♂	
Stephens	897	Reche Cañon	Sept. 23, 1891	♀	
Nelson	1560	San Luis Obispo, 12 miles west of	Nov. 29, 1891	♂	
Nelson	1499	San Simeon, mountains near to	Nov. 18, 1891	♀	
Nelson	1494	San Simeon, mountains near to	Nov. 17, 1891	♀	
Nelson	1512	San Simeon, near to	Nov. 21, 1891	♂	
Nelson	1745	Santa Paula	Dec. 28, 1891	♀	
Nelson	1750	Santa Paula	Dec. 29, 1891	♂	
Nelson	1760	Santa Paula	Dec. 30, 1891	♀	
Nelson	1767	Santa Paula	Dec. 31, 1891	♂	
Nelson	1771	Santa Paula	Jan. 2, 1892	♀	
Nelson	1596	Santa Yñez Mission	Dec. 4, 1891	♀	
Nelson	1695	Ventura River, near to	Dec. 21, 1891	♀	
Nelson	1694	Ventura River, near to	Dec. 21, 1891	♂	
Nelson		Gaviota Pass			OSTB Nov. 4 & Dec. 18, 1891

Neotoma fuscipes simplex
Neotoma macrotis simplex

The Fort Tejon Wood Rat had a larger geographic range than its common name suggests. It was collected at Fort Tejon, Hesperia, Lone Pine, Pruit's Ranch, San Emigdio, and eight miles west of Tejon Pass. The one from Lone Pine was collected on the bank of Lone Pine Creek close to where it joins Owens River. Its house was

placed in the middle of a patch of thick rose bushes on the creek bank. At Fort Tejon, they were common and a number of nests were found in the cañon where the fort occurs, i.e., Cañada de las Uvas.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	278	Fort Tejon	July 11, 1891	♂	
Palmer	264	Fort Tejon	July 8, 1891	♂	
Fisher	5	Hesperia	Jan. 5, 1891	♀	
Fisher	1	Hesperia	Jan. 4, 1891	♀	
Bailey	2310	Lone Pine	Dec. 25, 1890	♂	
Fisher	747	Pruit's Ranch	July 7, 1891	♂	
Bailey	3006	Pruit's Ranch	July 6, 1891	♂, imm	
Nelson	1374	San Emigdio	Oct. 25, 1891	♀	
Nelson	1309	Tejon Pass, 8 miles west of	Oct. 16, 1891	♀	
Nelson	1293	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1292	Tejon Pass, 8 miles west of	Oct. 15, 1891	♂	
Nelson	1291	Tejon Pass, 8 miles west of	Oct. 15, 1891	♂	

Neotoma fuscipes streatori
Neotoma fuscipes streatori

The Streator Wood Rat was collected at Michigan Bluff, where they were common, and at Three Rivers. Its wooden nests were observed by Mr. Bailey at Auburn sometime between October 19 and 24.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3457	Michigan Bluff	Oct. 28, 1891	♀	
Bailey	3275	Three Rivers	Sept. 17, 1891	♀	
Bailey		Auburn			OSTB Oct. 19 & 24, 1891

Neotoma cinerea
Neotoma cinerea acraia

The Gray Bushy-tailed Wood Rat was collected near the summit of the White Mountains where they were rather common among rocky ledges from 9,000 to 10,800 feet. In the Sierra Nevada, this taxon was collected at Big Cottonwood Meadows by Mr. Dutcher and where they did not appear to be common, at Big Whitney Meadows, Bishop Creek, Horse Corral Meadows, Kern River Lakes, two miles south of Mineral King, and at Rock Creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	204	Big Cottonwood Meadows	Aug. 31, 1891	♂	
Dutcher	203	Big Cottonwood Meadows	Aug. 29, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	201	Big Cottonwood Meadows	Aug. 27, 1891	♀	
Dutcher	200	Big Cottonwood Meadows	Aug. 27, 1891	♂	
Bailey	3239	Big Whitney Meadows	Aug. 29, 1891	♂	
Stephens	806	Bishop Creek	Aug. 8, 1891	♂	
Stephens	805	Bishop Creek	Aug. 8, 1891	♂	
Palmer	318	Horse Corral Meadows	Aug. 12, 1891	♂	
Fisher	945	Kern River Lakes	Sept. 4, 1891	♂	
Nelson	1252	Kern River Lakes	Sept. 4, 1891	♂	
Bailey	3254	Mineral King, 2 miles south of	Sept. 11, 1891	♂	
Bailey	3241	Rock Creek	Aug. 31, 1891	♂	
Nelson	1110	White Mountains, summit	July 15, 1891	♂	
Nelson	1100	White Mountains, summit	July 13, 1891	♂	
Nelson	1098	White Mountains, summit	July 12, 1891	♀	

Neotoma lepida monstrabilis
Neotoma lepida lepida

Mr. Bailey collected one female of the *monstrabilis* subspecies of *Neotoma lepida* (Bailey catalog # 2774) at Saint George, Utah, on May 13.

Microtus montanus
Microtus montanus micropus

The Peale Vole was collected five miles south of Austin by Mr. Bailey on November 10 and 12.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2114	Austin, 5 miles south of	Nov. 12, 1890	♂	
Bailey	2095	Austin, 5 miles south of	Nov. 10, 1890	♀	
Bailey	2094	Austin, 5 miles south of	Nov. 10, 1890	♂	
Bailey	2093	Austin, 5 miles south of	Nov. 10, 1890	♂	
Bailey	2092	Austin, 5 miles south of	Nov. 10, 1890	♀	
Bailey	2091	Austin, 5 miles south of	Nov. 10, 1890	♀	
Bailey	2090	Austin, 5 miles south of	Nov. 10, 1890	♀	

Microtus montanus rivularis
Microtus montanus rivularis

Mr. Bailey collected one immature male *Microtus montanus rivularis* (Bailey catalog # 2785) in Saint George, Utah, on May 15.

Microtus dutcheri
Microtus montanus dutcheri (45), *M. montanus montanus* (19)

The Dutcher Vole was collected at several high elevation locations in the Sierra. For the sake of brevity, only two of the 29 collections from Big Cottonwood Meadows are presented in the table below. The taxon was collected there, at Big Whitney Meadows, at the head of the North Fork of the Kern River, Mammoth, Monache Meadows, Olancha Peak, Pine City, and near the head of the San Joaquin River.

At Big Cottonwood Meadows, they were common in brush clumps especially in wet places, but they were seldom found on open meadows on account of the shortness of the grass. At Big Whitney Meadows, this taxon was common in wet meadows at 9,700 feet and its range there probably extended to timberline at 11,640 feet. In habits they were like other *Microtis*, living in wet marshes and making numerous runways through the grass. At Mammoth, they were found from 8,300 to 9,200 feet in elevation, and at the head of the San Joaquin River they were found between 4,000 and 8,500 feet.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	928	Big Cottonwood Meadows	Aug. 26, 1891	♀, ad	
Dutcher	82	Big Cottonwood Meadows	July 13, 1891	♀, juv	
Fisher	941	Big Whitney Meadows	Sept. 1, 1891	♀	
Bailey	3216	Big Whitney Meadows	Aug. 20, 1891	♂	
Bailey	3217	Big Whitney Meadows	Aug. 20, 1891	♂	
Bailey	3218	Big Whitney Meadows	Aug. 20, 1891	♂, imm	
Bailey	3219	Big Whitney Meadows	Aug. 20, 1891	♂, imm	
Bailey	3224	Big Whitney Meadows	Aug. 21, 1891	♂	
Bailey	3225	Big Whitney Meadows	Aug. 21, 1891	♂	
Bailey	3231	Big Whitney Meadows	Aug. 22, 1891	♀	
Bailey	3232	Big Whitney Meadows	Aug. 22, 1891	♂	
Bailey	3240	Big Whitney Meadows	Aug. 29, 1891	♀, juv	
Bailey	3215	Big Whitney Meadows	Aug. 20, 1891	♂	
Stephens	865	Kern River, North Fork, near head	Aug. 31, 1891	♂	
Nelson	1146	Mammoth	July 23, 1891	♀	
Nelson	1145	Mammoth	July 23, 1891	♀	
Nelson	1144	Mammoth	July 23, 1891	♀	
Nelson	1143	Mammoth	July 23, 1891	♂	
Nelson	1120	Mammoth	July 21, 1891	♀	
Nelson	1126	Mammoth	July 22, 1891	♂	
Stephens	764	Mammoth	July 23, 1891	♂	
Stephens	763	Mammoth	July 23, 1891	♀	
Stephens	748	Mammoth	July 22, 1891	♀	
Nelson	1142	Mammoth	July 23, 1891	♂	
Stephens	829	Monache Meadows	Aug. 21, 1891	♂	
Stephens	830	Monache Meadows	Aug. 21, 1891	♂	
Stephens	833	Olancha Peak	Aug. 22, 1891	♀	
Stephens	832	Olancha Peak	Aug. 22, 1891	♀	
Stephens	834	Olancha Peak	Aug. 22, 1891	♀	
Stephens	768	Pine City	July 25, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	769	Pine City	July 25, 1891	♀	
Stephens	770	Pine City	July 25, 1891	♀	
Nelson	1180	San Joaquin River, near head	July 29, 1891	♀	
Stephens	781	San Joaquin River, near head	July 28, 1891	♂	
Stephens	789	San Joaquin River, near head	July 29, 1891	♀	
Nelson	1169	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1170	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1171	San Joaquin River, near head	July 28, 1891	♀	

Microtus nevadensis
Microtus montanus nevadensis (16), *M. montanus fucosus* (3)

Seventeen Nevada Voles were collected in Ash Meadows in March and three were collected in Pahranagat Valley in May.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	421	Ash Meadows	Mar. 17, 1891	♀	
Nelson	577	Ash Meadows	Mar. 2, 1891	♂	
Nelson	586	Ash Meadows	Mar. 3, 1891	♀	
Fisher	340	Ash Meadows	Mar. 6, 1891	♂	
Fisher	354	Ash Meadows	Mar. 7, 1891	♂	
Nelson	576	Ash Meadows	Mar. 2, 1891	♂	
Fisher	379	Ash Meadows	Mar. 12, 1891	♂	
Palmer	125	Ash Meadows	Mar. 5, 1891	♂, imm	
Fisher	429	Ash Meadows	Mar. 19, 1891	♀	
Stephens	105	Ash Meadows	Mar. 4, 1891	♂	
Stephens	106	Ash Meadows	Mar. 4, 1891	♀	
Stephens	109	Ash Meadows	Mar. 5, 1891	♂	
Palmer	120	Ash Meadows	Mar. 4, 1891	♂	
Palmer	122	Ash Meadows	Mar. 4, 1891	♂, imm	
Palmer	123	Ash Meadows	Mar. 5, 1891	♂, imm	
Palmer	124	Ash Meadows	Mar. 5, 1891	♂, imm	
Fisher	366	Ash Meadows	Mar. 9, 1891	♂	
Bailey	2863	Pahranagat Valley	May 26, 1891	♀	
Bailey	2862	Pahranagat Valley	May 26, 1891	♂	
Bailey	2861	Pahranagat Valley	May 26, 1891	♂	

Microtus californicus
Microtus californicus californicus (32), *M. californicus kernensis* (7), *M. californicus mariposae* (5), *M. californicus sanctidiegi* (19), *M. longicaudus sierrae* (2)

The California Vole was only collected in California. For the sake of brevity, only two of the 24 specimens from Monterey are included in the table below. This vole was collected in Auburn, at Boulder Creek, Gaviota Pass, Pruit's Ranch, Monterey, Morro, Mount Piños, Pozo, Reche Cañon, Round Valley, at and near the head of the cañon near San Emigdio, near Santa Barbara and San Simeon and the Ventura River, and eight miles west of Tejon Pass.

This animal was common at Pruit's Ranch along the South Fork of the Kern River, where it lived in meadows and fields and in brush along the edge of the river. At Monterey, it swarmed through the woods and brush where it seemed to prefer dry ground on ridges or anywhere there was plenty of cover. The ground was fairly cut up by its holes and runways all through the brush and woods. Brush heaps and under logs were favorite places for them, and it seemed to be largely diurnal. At Boulder Creek, it was common in a grassy brushy hollow about a mile north of that town. At Auburn, it was numerous in certain localities especially in damp ravines and along ditches. At the head of San Emigdio Cañon, this vole was found in damp meadow-like flats overgrown with grass. At Pozo it was collected in dry hillsides among oaks. At Reche Cañon it was not common and was found at small springs with grass and thick weeds and also in dry gulches in chaparral where there happened to be a thick growth of vegetation.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3441	Auburn	Oct. 22, 1891	♀, imm	
Bailey	3440	Auburn	Oct. 22, 1891	♀	
Bailey	3439	Auburn	Oct. 22, 1891	♀	
Bailey	3438	Auburn	Oct. 22, 1891	♂	
Bailey	3431	Auburn	Oct. 21, 1891	♀	
Bailey	3414	Boulder Creek	Oct. 15, 1891	♀	
Bailey	3413	Boulder Creek	Oct. 15, 1891	♂	
Nelson	1610	Gaviota Pass	Dec. 9, 1891	♂	
Nelson	1611	Gaviota Pass	Dec. 9, 1891	♀	
Nelson	1629	Gaviota Pass	Dec. 10, 1891		
Bailey	3312	Monterey	Sept. 30. 1891		
Bailey	3370	Monterey	Oct. 5, 1891		
Nelson	1436	Morro	Nov. 7, 1891	♀	
Nelson	1437	Morro	Nov. 7, 1891	♀	
Nelson	1435	Morro	Nov. 7, 1891	♂	
Nelson	1467	Morro	Nov. 11, 1891	♀	
Nelson	1336	Mount Piños	Oct. 20, 1891	♀	
Nelson	1337	Mount Piños	Oct. 20, 1891	♀	
Bailey	2991	Pruit's Ranch	July 5, 1891	♂, imm	
Bailey	3029	Pruit's Ranch	July 8, 1891	♂, imm	
Bailey	3028	Pruit's Ranch	July 8, 1891	♀, imm	
Bailey	3027	Pruit's Ranch	July 8, 1891	♀, ad	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2999	Pruit's Ranch	July 6, 1891	♂, imm	
Bailey	3008	Pruit's Ranch	July 7, 1891	♀, imm	
Nelson	1410	Pozo	Oct. 30, 1891	♀	
Stephens	901	Reche Cañon	Sept. 23, 1891	♂	
Stephens	910	Reche Cañon	Sept. 24, 1891	♀	
Fisher	935	Round Valley	Aug. 29, 1891	♂	
Fisher	934	Round Valley	Aug. 29, 1891	♂, ad	
Nelson	1379	San Emigdio	Oct. 25, 1891	♀	
Nelson	1378	San Emigdio	Oct. 25, 1891	♂	
Nelson	1320	San Emigdio Cañon, head of	Oct. 18, 1891	♀	
Nelson	1331	San Emigdio Cañon, head of	Oct. 19, 1891	♀	
Nelson	1329	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1319	San Emigdio Cañon, head of	Oct. 18, 1891	♂	
Nelson	1330	San Emigdio Cañon, head of	Oct. 19, 1891	♀	
Nelson	1509	San Simeon, near to	Nov. 21, 1891	♀	
Nelson	1649	Santa Barbara, near to	Dec. 12, 1891	♀	
Nelson	1648	Santa Barbara, near to	Dec. 12, 1891	♂	
Nelson	1299	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1686	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1687	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1688	Ventura River, near to	Dec. 21, 1891	♀	

Microtus californicus vallicola
Microtus californicus vallicola

The Valley Vole was collected at lower elevation areas in the Mohave Desert. For the sake of brevity, only two of the 18 specimens from Lone Pine are provided in the table below.

In the Owens Valley, that taxon was collected at the Alabama Hills, Alvord, six miles north of Bishop, Cartago, Lone Pine, Independence Creek, and Olancha. Outside that valley, it was collected at Cottonwood Cañon and Willow Creek in the Panamint Mountains.

The Valley Vole was abundant along river flats in grassy and sedgy places and up through fields and through the cañon in the Alabama Hills to 4,800 feet. Its range in that area perhaps extended up into the Sierras, but was not taken above 4,800 feet. At Alvord, it was rather common and appeared to prefer the willow thickets with more or less grass. It was partly diurnal there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	99	Alabama Hills	Dec. 16, 1890	♂	
Nelson	102	Alabama Hills	Dec. 16, 1890	♂	
Nelson	104	Alabama Hills	Dec. 16, 1890	♀	
Nelson	122	Alabama Hills	Dec. 17, 1890	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2265	Alabama Hills	Dec. 17, 1890	♂	
Nelson	149	Alabama Hills	Dec. 23, 1890	♀	
Nelson	100	Alabama Hills	Dec. 16, 1890	♀	
Nelson	101	Alabama Hills	Dec. 16, 1890	♀	
Nelson	150	Alabama Hills	Dec. 23, 1890	♀	
Nelson	103	Alabama Hills	Dec. 16, 1890	♀	
Stephens	655	Alvord	June 26, 1891	♂	
Stephens	654	Alvord	June 26, 1891	♂	
Stephens	657	Alvord	June 27, 1891	♂	
Stephens	658	Alvord	June 27, 1891	♀	
Stephens	662	Alvord	June 28, 1891	♂	
Stephens	663	Alvord	June 28, 1891	♂	
Stephens	653	Alvord	June 26, 1891	♂	
Stephens	795	Bishop, 6 miles north of	Aug. 3, 1891	♂	
Stephens	796	Bishop, 6 miles north of	Aug. 3, 1891	♀	
Stephens	613	Cartago	June 10, 1891	♀	
Stephens	618	Cartago	June 11, 1891	♂	
Stephens	578	Cartago	June 4, 1891	♂, juv	
Nelson	906	Cottonwood Cañon, Panamint Mountains	May 26, 1891	♂	
Nelson	978	Cottonwood Cañon, Panamint Mountains	June 14, 1891	♀	
Nelson	900	Cottonwood Cañon, Panamint Mountains	May 24, 1891	♀	
Stephens	630	Independence Creek	June 19, 1891	♂	
Bailey	2249	Lone Pine	Dec. 15, 1890	♀	
Fisher	675	Lone Pine	June 9, 1891	♂	
Stephens	827	Olancha	Aug. 17, 1891	♀	
Stephens	625	Olancha	June 14, 1891	♂	
Palmer	190	Olancha	June 19, 1891	♀	
Stephens	480	Olancha	May 19, 1891	♂	
Nelson	827	Willow Creek, Panamint Mountains, head of	May 8, 1891	♂	
Nelson	816	Willow Creek, Panamint Mountains, head of	May 7, 1891	♀	
Nelson	847	Willow Creek, Panamint Mountains, head of	May 11, 1891	♂	
Nelson	848	Willow Creek, Panamint Mountains, head of	May 11, 1891	♂	
Nelson	876	Willow Creek, Panamint Mountains, head of	May 18, 1891	♂	
Nelson	815	Willow Creek, Panamint Mountains, head of	May 7, 1891	♀	

Microtus scirpensis
Microtus californicus scirpensis

The Desert Vole was only trapped at Medbury Spring. Mr. Bailey collected a total of 14 specimens there between February 26 and 28. It was abundant there and they lived in the thick grass, reeds, and *Scirpus* along the edge of the spring and stream that runs from it (Bailey 1891-17).

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2542	Medbury Spring	Feb. 28, 1891	♀	
Bailey	2541	Medbury Spring	Feb. 28, 1891	♀	
Bailey	2540	Medbury Spring	Feb. 28, 1891	♀	
Bailey	2539	Medbury Spring	Feb. 28, 1891	♀	
Bailey	2538	Medbury Spring	Feb. 28, 1891	♂	
Bailey	2537	Medbury Spring	Feb. 28, 1891	♂	
Bailey	2536	Medbury Spring	Feb. 28, 1891	♂	
Bailey	2526	Medbury Spring	Feb. 27, 1891	♀, juv	
Bailey	2525	Medbury Spring	Feb. 27, 1891	♂, juv	
Bailey	2524	Medbury Spring	Feb. 27, 1891	♂, juv	
Bailey	2523	Medbury Spring	Feb. 27, 1891	♂	
Bailey	2522	Medbury Spring	Feb. 27, 1891	♀	
Bailey	2521	Medbury Spring	Feb. 26, 1891	♀	
Bailey	2520	Medbury Spring	Feb. 26, 1891	♀	

Microtus mordax
Microtus longicaudus latus (32), *M. longicaudus sierrae* (95)

For the sake of brevity, only two of the 19 Cantankerous Vole records from Big Cottonwood Meadows, two of the 17 records from Halstead Meadows, and two of the 18 specimens from the Reese River at the Lander–Nye County line are included in the table below.

In Nevada, this vole was collected at Cloverdale Creek, Indian Creek two miles above the junction with Reese River, at Indian Queen, Indian Queen Mine, Indian Queen Mill, Reese River at the junction with Indian Creek and at the Lander–Nye County line. They were numerous along the brushy banks of the Reese River at the county line 33 miles south of Austin. They had runways all through the brush and seemed to run as much during the daytime as at night. Mr. Bailey frequently saw them running through the brush. They did not appear to be common at the Indian Queen Mill or Mine.

In California, the Cantankerous Vole was collected at the Alabama Hills, Big Cottonwood Meadows where they were quite common and seemed to seek the shelter of willows, Big Whitney Meadows, at Bishop Creek where they were not common, Dick's Ranch on the South Fork of the Kern River, Halstead Meadows, Horse Corral Meadows, on the East Fork of the Kaweah River at and near Mineral King, near the head of North Fork of the Kern River, Mammoth where they were rather common from 8,300 to 9,500 feet, Mulkey Meadows, Olancha Peak, Pine City, near the head of the San Joaquin River, along the summit ridge of the White Mountains, and in Yosemite Valley. In regard to the White Mountain summit ridge, these voles were rather common among the willows and aspens at the head of the creeks flowing into Deep Spring and Fish Lake valleys at an altitude between 9,000 and 10,000 feet.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2264	Alabama Hills	Dec. 17, 1890	♂	
Nelson	140	Alabama Hills	Dec. 22, 1890	♀	
Dutcher	192	Big Cottonwood Meadows	Aug. 13, 1891	♀	
Dutcher	24	Big Cottonwood Meadows	July 5, 1891	♂	
Bailey	3220	Big Whitney Meadows	Aug. 20, 1891	♂, ad	
Bailey	3230	Big Whitney Meadows	Aug. 22, 1891	♀	
Bailey	3221	Big Whitney Meadows	Aug. 20, 1891	♀, ad	
Stephens	867	Big Whitney Meadows	Sept. 2, 1891	♀	
Stephens	866	Big Whitney Meadows	Sept. 2, 1891	♂	
Stephens	821	Bishop Creek	Aug. 10, 1891	♀	
Stephens	809	Bishop Creek	Aug. 8, 1891	♂	
Bailey	2217	Cloverdale Creek, 3 miles below the divide	Nov. 29, 1890	♂	
Bailey	2218	Cloverdale Creek, 3 miles below the divide	Nov. 29, 1890	♂	
Bailey	2219	Cloverdale Creek, 3 miles below the divide	Nov. 29, 1890	♀	
Bailey	2220	Cloverdale Creek, 3 miles below the divide	Nov. 29, 1890	♀	
Bailey	2221	Cloverdale Creek, 3 miles below the divide	Nov. 29, 1890	♀	
Bailey	3208	Dick's Ranch	Aug. 15, 1891	♀	
Fisher	894	Halsted Meadows	Aug. 9, 1891	♂, ad	
Fisher	887	Halsted Meadows	Aug. 8, 1891	♀, imm	
Fisher	912	Horse Corral Meadows	Aug. 12, 1891	♂	
Fisher	897	Horse Corral Meadows	Aug. 10, 1891	♀, imm	
Fisher	898	Horse Corral Meadows	Aug. 10, 1891	♀, imm	
Fisher	899	Horse Corral Meadows	Aug. 10, 1891	♀, ad	
Fisher	900	Horse Corral Meadows	Aug. 10, 1891	juv	
Fisher	901	Horse Corral Meadows	Aug. 10, 1891	juv	
Fisher	902	Horse Corral Meadows	Aug. 10, 1891	juv	
Fisher	903	Horse Corral Meadows	Aug. 10, 1891	juv	
Fisher	904	Horse Corral Meadows	Aug. 11, 1891	♀, imm	
Fisher	916	Horse Corral Meadows	Aug. 13, 1891	♀	
Bailey	2213	Indian Creek, 2 miles above junction with Reese River	Nov. 28, 1890	♀	
Stephens	712	Indian Queen	July 11, 1891	♂	
Stephens	720	Indian Queen Mill	July 13, 1891	♀, juv	
Stephens	719	Indian Queen Mill	July 13, 1891	♀	
Stephens	733	Indian Queen Mine	July 16, 1891	♂	
Stephens	726	Indian Queen Mine	July 14, 1891	♀	
Stephens	734	Indian Queen Mine	July 16, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	727	Indian Queen Mine	July 14, 1891	♀	
Bailey	3179	Kaweah River, East Fork, Mineral King	Aug. 5, 1891	♂	
Bailey	3172	Kaweah River, East Fork, Mineral King	Aug. 4, 1891	♀, imm	
Bailey	3180	Kaweah River, East Fork, Mineral King	Aug. 6, 1891	♂	
Bailey	3181	Kaweah River, East Fork, Mineral King	Aug. 6, 1891	♂	
Bailey	3182	Kaweah River, East Fork, Mineral King	Aug. 6, 1891	♀	
Bailey	3186	Kaweah River, East Fork, Mineral King	Aug. 7, 1891	♂	
Bailey	3193	Kaweah River, East Fork, Mineral King	Aug. 8, 1891	♂	
Bailey	3131	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♂	
Bailey	3115	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♂	
Bailey	3238	Kern River, North Fork, near head	Aug. 26, 1891	♀	
Bailey	3237	Kern River, North Fork, near head	Aug. 26, 1891	♀	
Nelson	1127	Mammoth	July 22, 1891	♂	
Nelson	1156	Mammoth	July 25, 1891	♂	
Nelson	1155	Mammoth	July 25, 1891	♀	
Nelson	1133	Mammoth	July 22, 1891	♀	
Stephens	767	Mammoth	July 24, 1891	♀	
Stephens	766	Mammoth	July 24, 1891	♂	
Nelson	1128	Mammoth	July 22, 1891	♀	
Nelson	1154	Mammoth	July 25, 1891	♂	
Bailey	3165	Mineral King	Aug. 4, 1891	♂	
Bailey	3166	Mineral King	Aug. 4, 1891	♂	
Bailey	3167	Mineral King	Aug. 4, 1891	♂	
Bailey	3168	Mineral King	Aug. 4, 1891	♂	
Bailey	3169	Mineral King	Aug. 4, 1891	♂	
Bailey	3170	Mineral King	Aug. 4, 1891	♂	
Bailey	3171	Mineral King	Aug. 4, 1891	♂	
Bailey	3145	Mineral King	Aug. 1, 1891	♂, imm	
Bailey	3138	Mineral King	July 31, 1891	♀, imm	
Fisher	971	Mineral King, 1 mile below	Sept. 12, 1891	♀	
Stephens	858	Mulkey Meadows	Aug. 27, 1891	♂	
Stephens	843	Olancha Peak	Aug. 24, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	792	Pine City	July 30, 1891	♀	
Bailey	2210	Reese River, at junction of Indian Creek	Nov. 27, 1890	♀	
Bailey	2160	Reese River, Lander–Nye County line	Nov. 20, 1890	♀	
Bailey	2140	Reese River, Lander–Nye County line	Nov. 19, 1890	♀	
Nelson	1184	San Joaquin River, near head	July 30, 1891	♀	
Nelson	1181	San Joaquin River, near head	July 29, 1891	♂	
Nelson	1093	White Mountains, summit	July 12, 1891	♂	
Nelson	1094	White Mountains, summit	July 12, 1891	♂	
Nelson	1102	White Mountains, summit	July 13, 1891	♀	
Nelson	1095	White Mountains, summit	July 12, 1891	♀	
Nelson	1104	White Mountains, summit	July 14, 1891	♀	
Nelson	1214	Yosemite Valley	Aug. 7, 1891	♀	
Nelson	1218	Yosemite Valley	Aug. 8, 1891	♂	
Nelson	1219	Yosemite Valley	Aug. 8, 1891	♂	

Microtus curtatus
Lemmiscus curtatus curtatus (37), *L. curtatus intermedius* (7)

The Short-tailed Vole was collected in Nevada on Indian Creek, Mount Magruder, where the Reese River and Indian Creek intersect, and on the Reese River at the Lander–Nye County line at a location 50 feet above the river and where there was a sagebrush-covered hill.

In California, this vole was collected in the Inyo Mountains near Lone Pine and at Waucoba Mountain where it was common at both locations, and along the summit ridge of the White Mountains.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2211	Indian Creek, 2 miles above junction with Reese River	Nov. 28, 1890	♀	
Bailey	2212	Indian Creek, 2 miles above junction with Reese River	Nov. 28, 1890	♂	
Nelson	989	Inyo Mountains, near Lone Pine	June 25, 1891	♂	
Nelson	1009	Inyo Mountains, near Lone Pine	June 27, 1891	♀	
Nelson	988	Inyo Mountains, near Lone Pine	June 25, 1891	♂	
Nelspn	1008	Inyo Mountains, near Lone Pine	June 27, 1891	♀	
Nelson	996	Inyo Mountains, near Lone Pine	June 26, 1891	♂	
Nelson	990	Inyo Mountains, near Lone Pine	June 25, 1891	♀	
Nelson	1032	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Nelson	1033	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1034	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Nelson	1045	Inyo Mountains, Waucoba Mountain	July 3, 1891	♂	
Nelson	1046	Inyo Mountains, Waucoba Mountain	July 3, 1891	♀	
Nelson	1047	Inyo Mountains, Waucoba Mountain	July 3, 1891	♀	
Nelson	1048	Inyo Mountains, Waucoba Mountain	July 3, 1891	♀	
Nelson	1049	Inyo Mountains, Waucoba Mountain	July 3, 1891	♀	
Nelson	1050	Inyo Mountains, Waucoba Mountain	July 3, 1891	♂	
Nelson	1051	Inyo Mountains, Waucoba Mountain	July 3, 1891	♂	
Nelson	1031	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Nelson	1030	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Bailey	2930	Mount Magruder	June 8, 1891	♂, ad	
Bailey	2929	Mount Magruder	June 7, 1891	♂, juv	
Bailey	2924	Mount Magruder	June 7, 1891	♂, juv	
Bailey	2919	Mount Magruder	June 7, 1891	♀	
Bailey	2923	Mount Magruder	June 7, 1891	♂, juv	
Bailey	2922	Mount Magruder	June 7, 1891	♂, juv	
Bailey	2921	Mount Magruder	June 7, 1891	♂	
Bailey	2920	Mount Magruder	June 7, 1891	♀	
Bailey	2911	Mount Magruder	June 6, 1891	♀, ad	
Bailey	2912	Mount Magruder	June 6, 1891	♀, ad	
Bailey	2913	Mount Magruder	June 6, 1891	♂, ad	
Bailey	2914	Mount Magruder	June 7, 1891	♂, ad	
Bailey	2918	Mount Magruder	June 7, 1891	♀	
Bailey	2925	Mount Magruder	June 7, 1891	♂, juv	
Bailey	2205	Reese River, at junction of Indian Creek	Nov. 27, 1890	♀	
Bailey	2206	Reese River, at junction of Indian Creek	Nov. 27, 1890	♀, juv	
Bailey	2197	Reese River, Lander–Nye County line	Nov. 24, 1890	♀, juv	
Bailey	2188	Reese River, Lander–Nye County line	Nov. 23, 1890	♂	
Bailey	2198	Reese River, Lander–Nye County line	Nov. 25, 1890	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2199	Reese River, Lander–Nye County line	Nov. 25, 1890	♂	
Bailey	2200	Reese River, Lander–Nye County line	Nov. 25, 1890	♂	
Nelson	1072	White Mountains, summit	July 8, 1891	♂	
Nelson	1073	White Mountains, summit	July 8, 1891	♀	
Nelson	1092	White Mountains, summit	July 10, 1891	♂	

Epimys rattus
Rattus rattus

Mr. Nelson captured one male non-native Black Rat (Nelson catalog # 1422) at San Luis Obispo on November 4.

Mus musculus musculus
Mus musculus domesticus

The non-native House Mouse was collected in Utah at Saint George.

This pest was collected in Nevada at the Las Vegas Ranch, where they were numerous around the buildings, and in the Pahranagat Valley.

In California it was collected at Auburn in a little grassy patch by the railroad just north of town, at Keeler, Lone Pine where it was common in houses and around fields, and Olancha where one was caught in the post office.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3434	Auburn	Oct. 21, 1891	♂	
Nelson	53	Keeler	Dec. 10, 1890	♂	
Nelson	52	Keeler	Dec. 9, 1890	♂	
Nelson	51	Keeler	Dec. 9, 1890	♀	
Bailey	2601	Las Vegas Ranch	Mar. 12, 1891	♀	
Bailey	2600	Las Vegas Ranch	Mar. 12, 1891	♀	
Bailey	2599	Las Vegas Ranch	Mar. 12, 1891	♀	
Bailey	2244	Lone Pine	Dec. 12, 1890	♂	
Nelson	106	Lone Pine	Dec. 16, 1890	♀	
Stephens	503	Olancha	May 21, 1891	♀	
Bailey	2847	Pahranagat Valley	May 24, 1891	♂, ad	
Bailey	2787	Saint George	May 15, 1891	♀	

FAMILY GEOMYIDAE

Thomomys townsendi nevadensis
Thomomys townsendii nevadensis

The Nevada Pocket Gopher was collected at two locations in Nevada. Five miles south of Austin, they were found to throw up large piles of earth, and they kept strictly to the low part of the valley and mostly in meadow land. Mr. Bailey collected 14 specimens at Battle Mountain near the Humboldt River in a big meadow on November 3 and 4, 1890. He found their hills to be common in that area. At a spring near the side of the valley three miles southwest of that town, they were numerous in the grassy ground around a spring.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2097	Austin, 5 miles south of	Nov. 10, 1890	♂	
Bailey	2098	Austin, 5 miles south of	Nov. 10, 1890	♂	
Bailey	2099	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2100	Austin, 5 miles south of	Nov. 11, 1890	♂	
Bailey	2101	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2102	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2111	Austin, 5 miles south of	Nov. 12, 1890	♀	
Bailey	2096	Austin, 5 miles south of	Nov. 10, 1890	♂	
Bailey	2058	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2059	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2066	Battle Mountain	Nov. 4, 1890	♂	
Bailey	2056	Battle Mountain	Nov. 3, 1890	♀	
Bailey	2050	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2052	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2053	Battle Mountain	Nov. 3, 1890	♀	
Bailey	2051	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2057	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2061	Battle Mountain	Nov. 3, 1890	♀	
Bailey	2060	Battle Mountain	Nov. 3, 1890	♂	
Bailey	2055	Battle Mountain	Nov. 3, 1890	♀	
Bailey	2062	Battle Mountain	Nov. 3, 1890	♀	
Bailey	2054	Battle Mountain	Nov. 3, 1890	♀	

Thomomys bottae bottae
Thomomys bottae bottae

The California Pocket Gopher was collected in counties of coastal California. The collection locations in those counties included Carpinteria where they were common everywhere, Gaviota Pass, Monterey where they were numerous everywhere on the sandy beach and back through the woods, Morro, Pozo where they were common everywhere, in the mountains near San Simeon, Santa Paula where they were common everywhere, and at Santa Yñez Mission.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1650	Carpinteria	Dec. 19, 1891	♂	
Nelson	1651	Carpinteria	Dec. 19, 1891	♀	
Nelson	1639	Gaviota Pass	Dec. 10, 1891	♂	
Nelson	1638	Gaviota Pass	Dec. 10, 1891	♂	
Nelson	1609	Gaviota Pass	Dec. 9, 1891	♀	
Bailey	3300	Monterey	Sept. 30, 1891	♂	
Bailey	3302	Monterey	Sept. 30, 1891	♂	
Bailey	3338	Monterey	Oct. 1, 1891	♂	
Bailey	3356	Monterey	Oct. 2, 1891	♀	
Bailey	3339	Monterey	Oct. 1, 1891	♂	
Bailey	3301	Monterey	Sept. 30, 1891	♂	
Nelson	1433	Morro	Nov. 7, 1891	♂	
Nelson	1434	Morro	Nov. 7, 1891	♀	
Nelson	1418	Pozo	Oct. 31, 1891	♂	
Nelson	1419	Pozo	Oct. 31, 1891	♀	
Nelson	1506	San Simeon, mountains near to	Nov. 19, 1891	♂	
Nelson	1503	San Simeon, mountains near to	Nov. 18, 1891	♂	
Nelson	1772	Santa Paula	Jan. 2, 1892	♂	
Nelson	1608	Santa Yñez Mission	Dec. 8, 1891	♂	
Nelson	1602	Santa Yñez Mission	Dec. 6, 1891	♂	

Thomomys bottae mewa
Thomomys bottae mewa

The Digger Pine Pocket Gopher was only collected at one location. Mr. Bailey collected a total of three specimens at Three Rivers on September 15 and 16.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3271	Three Rivers	Sept. 16, 1891	♂	
Bailey	3261	Three Rivers	Sept. 15, 1891	♂, imm	
Bailey	3260	Three Rivers	Sept. 15, 1891	♀	

Thomomys bottae pascalis
Thomomys bottae pascalis (4), *T. bottae bottae* (4)

The Fresno Pocket Gopher was captured at Alila, six miles south of Delano, Elk Bayou near Tulare, Fort Tejon, Fresno, and eight miles west of Tejon Pass. Mr. Bailey observed that their hills were common at Walker Basin, but he did not secure any specimens there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1258	Alila	Oct. 8, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3079	Delano, 6 miles south of town	July 21, 1891	♂	
Bailey	3081	Elk Bayou	July 22, 1891	♂	
Palmer	269	Fort Tejon	July 8, 1891	♀	
Bailey	3296	Fresno	Sept. 25, 1891	♂, imm	
Nelson	1306	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1296	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1295	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Bailey		Walker Basin			OSTB July 13 & 16, 1891

Thomomys alpinus alpinus
Thomomys bottae alpinus

The Mount Whitney Pocket Gopher was noteworthy because it was most commonly collected at high elevation localities. Mr. Dutcher collected several specimens at a 10,300 feet elevation at Big Cottonwood Meadows, it was collected at Big Whitney Meadows at an elevation of 10,580 feet, and it was collected on Olancha Peak. For the sake of brevity, only nine of the 23 specimens collected at Big Cottonwood Meadows are included in the table below.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	124	Big Cottonwood Meadows	July 22, 1891	♀	
Fisher	927	Big Cottonwood Meadows	Aug. 26, 1891	♂, ad	
Dutcher	11	Big Cottonwood Meadows	June 27, 1891	♀	
Dutcher	13	Big Cottonwood Meadows	June 30, 1891	♂	
Dutcher	40	Big Cottonwood Meadows	July 6, 1891	♀	
Dutcher	41	Big Cottonwood Meadows	July 6, 1891	♀	
Dutcher	42	Big Cottonwood Meadows	July 6, 1891	♀	
Dutcher	43	Big Cottonwood Meadows	July 6, 1891	♀	
Dutcher	89	Big Cottonwood Meadows	July 15, 1891	♀	
Bailey	3229	Big Whitney Meadows	Aug. 22, 1891	♀	
Stephens	844	Olancha Peak	Aug. 24, 1891	♂	
Stephens	838	Olancha Peak	Aug. 22, 1891	♀	

Thomomys alpinus awahnee
Thomomys bottae awahnee (1), *T. bottae mewa* (15)

Only one Yosemite Pocket Gopher was collected in Yosemite, and the Death Valley Expedition biologists collected the rest of that taxon's specimens outside that valley. Those locations include Dick's Ranch, Halstead Meadows, Horse Corral Meadows, the East Fork of the Kaweah River, Kern River Lakes on the Kern River, Mineral King, and one mile downstream of that location.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3207	Dick's Ranch	Aug. 15, 1891	♀	
Fisher	888	Halsted Meadows	Aug. 8, 1891	♀, ad	
Fisher	868	Halsted Meadows	Aug. 6, 1891	♂, ad	
Fisher	869	Halsted Meadows	Aug. 6, 1891	♂	
Fisher	876	Halsted Meadows	Aug. 7, 1891	♀, imm	
Palmer	313	Halsted Meadows	Aug. 8, 1891	♀	
Fisher	870	Halsted Meadows	Aug. 6, 1891	♂, imm	
Fisher	907	Horse Corral Meadows	Aug. 11, 1891	♂	
Fisher	908	Horse Corral Meadows	Aug. 11, 1891	♀	
Bailey	3176	Kaweah River, East Fork, Mineral King	Aug. 5, 1891	♂	
Bailey	3117	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♀, ad	
Fisher	946	Kern River Lakes	Sept. 4, 1891	♀	
Fisher	970	Mineral King	Sept. 11, 1891	♀, ad	
Fisher	972	Mineral King, 1 mile below	Sept. 12, 1891	♂	
Fisher	973	Mineral King, 1 mile below	Sept. 12, 1891	♀	
Nelson	1225	Yosemite Valley	Aug. 8, 1891	♀	

Thomomys perpallidus aureus
Thomomys bottae perpallidus

With the exception of collections of the Yellow Pocket Gopher at Medbury Springs and 10 miles north of the Amargosa Borax Works along the Amargosa River in Inyo County, California, all the remaining collections of this taxon were at locations in Nevada.

For the sake of brevity, only two of the 49 collections in Ash Meadows and two of 21 collections in Pahrump Valley are included in the table below. In Nevada, this gopher taxon was collected at Ash Meadows, on the east slope of the Charleston Mountains, at Corn Creek, Las Vegas Ranch, Mountain Springs, the southern end of Oasis Valley, and in Pahranagat and Pahrump valleys.

These animals were abundant in moist ground about Pahrump Ranch, and in several instances two individuals were found in the same hole. They were also common in Las Vegas Valley at 1,800 feet and their distribution extended up along the bottom of that valley to Corn Creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2535	Amargosa River, 10 miles north of Amargosa Borax Works	Feb. 28, 1891	♀	
Nelson	662	Ash Meadows	Mar. 18, 1891	♀	
Stephens	65	Ash Meadows	Feb. 28, 1891	♀	
Nelson	621	Charleston Mountains, east slope	Mar. 8, 1891	♂	
Bailey	2621	Corn Creek	Mar. 15, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2708	Las Vegas Ranch	May 1, 1891	♂, juv	
Bailey	2591	Las Vegas Ranch	Mar. 12, 1891	♂	
Bailey	2590	Las Vegas Ranch	Mar. 12, 1891	♂	
Bailey	2576	Las Vegas Ranch	Mar. 10, 1891	♀	
Bailey	2588	Las Vegas Ranch	Mar. 11, 1891	♂	
Bailey	2710	Las Vegas Ranch	May 1, 1891	♂, juv	
Bailey	2603	Las Vegas Ranch	Mar. 12, 1891	♂	
Bailey	2709	Las Vegas Ranch	May 1, 1891	♂, juv	
Bailey	2519	Medbury Spring	Feb. 26, 1891	♂	
Bailey	2518	Medbury Spring	Feb. 26, 1891	♂	
Bailey	2549	Mountain Springs	Mar. 7, 1891	♀	
Stephens	154	Oasis Valley, lower end	Mar. 17, 1891	♂	
Stephens	143	Oasis Valley, lower end	Mar. 16, 1891	♀	
Stephens	140	Oasis Valley, lower end	Mar. 15, 1891	♀	
Bailey	2853	Pahranagat Valley	May 25, 1891	♀	
Bailey	2852	Pahranagat Valley	May 25, 1891	♀	
Nelson	473	Pahrump Valley	Feb. 18, 1891	♂	
Nelson	465	Pahrump Valley	Feb. 17, 1891	♀	

Thomomys perpallidus perpes
Thomomys bottae perpallidus (16), *T. bottae bottae* (98)

In spite of its common name, the Lone Pine Pocket Gopher was found to be an extremely wide-ranging taxon, and a total of 114 specimens were collectively taken by the Death Valley Expedition biologists at 27 locations as identified in the table below. For the sake of brevity, only two of the 16 specimens from Coso and two of the 24 specimens from Resting Springs are provided in the table below. Their hills were observed at the Borax Flat Borax Works, Browns Peak, Indian Joe Cañon, Little Lake, Post Office Spring, Salt Wells Valley, and Sheperd Cañon.

The Lone Pine Pocket Gopher was common from the edge of Owens Lake all through most of Owens Valley and up into the Sierra Nevada. They were not found in the low part of Panamint Valley, but their hills were seen in Shepherd Cañon at about 3,000 feet and at 5,392 feet on the top of Browns Peak. They were common in Salt Wells Valley about four miles from Indian Wells, and the summit of Walker Pass. They were abundant in grassy places around Resting Springs and Medbury Spring, at the charcoal kilns near Wildrose Cañon, the summit of Coso Peak, near Haiwee Meadows, at Grapevine Ranch, and in the Grapevine Mountains.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2299	Alabama Hills	Dec. 18, 1890	♀	
Bailey	2271	Alabama Hills	Dec. 17, 1890	♂	
Bailey	2270	Alabama Hills	Dec. 17, 1890	♂	
Bailey	2269	Alabama Hills	Dec. 17, 1890	♂	
Nelson	143	Alabama Hills	Dec. 22, 1890	♂	
Nelson	145	Alabama Hills	Dec. 23, 1890	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	125	Alabama Hills	Dec. 17, 1890		
Stephens	558	Ash Creek	June 1, 1891	♀	
Stephens	303	Charcoal Kilns	Apr. 19, 1891	♀	
Fisher	590	Coso	May 19, 1891	♂, imm	
Fisher	649	Coso	May 26, 1891	♀	
Nelson	693	Cottonwood Cañon, Panamint Mountains	Mar. 26, 1891	♀	
Nelson	694	Cottonwood Cañon, Panamint Mountains	Mar. 28, 1891	♀	
Nelson	923	Cottonwood Cañon, Panamint Mountains	May 29, 1891	♀	
Nelson	699	Cottonwood Cañon, Panamint Mountains	Mar. 29, 1891	♀	
Nelson	692	Cottonwood Cañon, Panamint Mountains	Mar. 26, 1891	♂	
Bailey	2942	Deep Springs—Owens Valley Pass	June 10, 1891	♀	
Bailey	2670	Emigrant Wash, at head of	Apr. 16, 1891	♀	
Bailey	2669	Emigrant Wash, at head of	Apr. 16, 1891	♀	
Bailey	2671	Emigrant Wash, at head of	Apr. 16, 1891	♀	
Fisher	27	Granite Springs	Jan. 14, 1891	♂	
Stephens	201	Grapevine Mountains	Mar. 27, 1891	♂	
Stephens	199	Grapevine Mountains	Mar. 26, 1891	♀	
Stephens	183	Grapevine Mountains	Mar. 22, 1891	♂	
Stephens	246	Grapevine Ranch	Apr. 4, 1891	♀	
Stephens	245	Grapevine Ranch	Apr. 4, 1891	♀	
Stephens	244	Grapevine Ranch	Apr. 4, 1891	♂	
Stephens	441	Haiwee Meadows	May 13, 1891	♂	
Fisher	2	Hesperia	Jan. 4, 1891	♂	
Stephens	634	Independence Creek	June 20, 1891	♀	
Stephens	644	Independence Creek	June 23, 1891	♀	
Fisher	439	Johnson Cañon	Mar. 28, 1891	♂	
Nelson	722	Johnson Cañon	Apr. 11, 1891	♂	
Fisher	468	Johnson Cañon	Mar. 31, 1891	♀	
Nelson	722	Johnson Cañon	Apr. 1, 1891	♀	
Fisher	528	Johnson Cañon	Apr. 10, 1891	♀	
Fisher	671	Lone Pine	June 8, 1891	♀	
Nelson	93	Lone Pine	Dec. 14, 1890	♀	
Nelson	94	Lone Pine	Dec. 14, 1890	♀	
Nelson	95	Lone Pine	Dec. 14, 1890	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	685	Lone Pine	June 11, 1891	♀	
Bailey	2250	Lone Pine	Dec. 15, 1890	♀	
Nelson	89	Lone Pine	Dec. 14, 1890	♀	
Nelson	90	Lone Pine	Dec. 14, 1890	♀	
Nelson	91	Lone Pine	Dec. 14, 1890	♀	
Nelson	92	Lone Pine	Dec. 14, 1890	♀	
Bailey	2235	Lone Pine	Dec. 12, 1890	♀	
Bailey	2395	Lone Willow Spring	Jan. 15, 1891	♀	
Bailey	2385	Lone Willow Spring	Jan. 14, 1891	♂	
Nelson	298	Lone Willow Spring	Jan. 17, 1891	♂	
Palmer	4	Lone Willow Spring	Jan. 15, 1891	♀	
Nelson	284	Lone Willow Spring	Jan. 16, 1891	♀	
Nelson	299	Lone Willow Spring	Jan. 17, 1891	♂	
Palmer	13	Lone Willow Spring	Jan. 17, 1891	♀	
Bailey	2323	Maturango Spring	Jan. 2, 1891	♂	
Stephens	513	Olancha	May 22, 1891	♀	
Stephens	498	Olancha	May 20, 1891	♀	
Stephens	598	Olancha, 5 miles southwest of	June 7, 1891	♀	
Bailey	2985	Pruit's Ranch	July 4, 1891	♀	
Bailey	2986	Pruit's Ranch	July 4, 1891	♀	
Bailey	2987	Pruit's Ranch	July 4, 1891	♂, imm	
Fisher	728	Pruit's Ranch	July 5, 1891	♂	
Fisher	727	Pruit's Ranch	July 4, 1891	♂	
Fisher	205	Resting Springs	Feb. 15, 1891	♀	
Palmer	65	Resting Springs	Feb. 7, 1891	♀	
Stephens	27	Resting Springs	Feb. 18, 1891	♀	
Nelson	144	Sierra Nevada, near Lone Pine	Dec. 22, 1890	♀	
Bailey	2687	Telescope Peak, northwest base	Apr. 17, 1891	♂	
Stephens	221	Thorpe Mill	Mar. 30, 1891	♂	
Stephens	42	Twelve Mile Spring	Feb. 22, 1891	♀	
Bailey	2971	Walker Pass, east slope	July 1, 1891	♀	
Bailey	2972	Walker Pass, east slope	July 1, 1891	♀, imm	
Fisher	710	Walker Pass, east slope	July 2, 1891	♂	
Fisher	708	Walker Pass, east slope	July 1, 1891	♀	
Fisher	707	Walker Pass, east slope	July 1, 1891	♀	
Fisher	709	Walker Pass, east slope	July 2, 1891	♂	
Nelson	872	Willow Creek, Panamint Mountains, head of	May 17, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens		Borax Flat Borax Works			OSTB April 28 & 30, 1891
Bailey		Brown Mountain			OSTB Jan. 3 & 18, 1891
Stephens		Indian Joe Cañon			OSTB Apr. 23 & 26, 1891
Stephens		Little Lake			OSTB May 6 & 11, 1891
Bailey		Post Office Spring, 13 miles south of			OSTB Jan. 3 & 18, 1891
Stephens		Salt Wells Valley (Indian Wells Valley)			OSTB May 1 & 5, 1891
Bailey		Shepherd Cañon			OSTB Jan. 3 & 18, 1891

Thomomys operarius
Thomomys bottae operarius

Twenty-seven specimens of the Owens Lake Pocket Gopher were collected at Keeler on the shore of Owens Lake. Most of those specimens were collected in late November or December of 1890, and three were collected in June of 1891 by Mr. Bailey.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	27	Keeler	Dec. 2, 1890	♀	
Nelson	2	Keeler	Nov. 29, 1890	♀	
Nelson	3	Keeler	Nov. 29, 1890	♂, imm	
Nelson	4	Keeler	Nov. 29, 1890	♀	
Nelson	5	Keeler	Nov. 29, 1890	♀, imm	
Nelson	6	Keeler	Nov. 30, 1890	♀	
Nelson	7	Keeler	Nov. 30, 1890	♂	
Nelson	10	Keeler	Nov. 30, 1890	♀	
Nelson	12	Keeler	Dec. 1, 1890	♀	
Nelson	13	Keeler	Dec. 1, 1890	♀, imm	
Nelson	14	Keeler	Dec. 1, 1890	♂	
Nelson	15	Keeler	Dec. 1, 1890	♂	
Nelson	1	Keeler	Nov. 29, 1890	♂	
Nelson	26	Keeler	Dec. 2, 1890	♂	
Bailey	2966	Keeler	June 27, 1891	♀	
Nelson	31	Keeler	Dec. 3, 1890	♂	
Nelson	32	Keeler	Dec. 5, 1890	♀, imm	
Nelson	33	Keeler	Dec. 5, 1890	♀	
Nelson	34	Keeler	Dec. 5, 1890	♂	
Nelson	40	Keeler	Dec. 6, 1890	♂	
Nelson	41	Keeler	Dec. 6, 1890	♀	
Nelson	42	Keeler	Dec. 6, 1890	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	43	Keeler	Dec. 6, 1890	♀	
Nelson	44	Keeler	Dec. 6, 1890	♀	
Bailey	2964	Keeler	June 27, 1891	♂	
Bailey	2965	Keeler	June 27, 1891	♂	
Nelson	16	Keeler	Dec. 1, 1890	♀	

Thomomys quadratus fisheri
Thomomys talpoides falcifer (11), *T. talpoides monoensis* (1)

In California, one Fisher Pocket Gopher was collected by Mr. Stephens at Casa Diablo Spring. In Nevada, Mr. Bailey caught six of these animals at the Lander–Nye County line. He caught five at Silver Creek near the base of the adjacent mountain range and thought their range extended to the tops of the mountains there. Their little hills were easily distinguished from the large hills of larger gophers.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	741	Casa Diablo Springs	July 21, 1891		
Bailey	2204	Reese River, Lander–Nye County line	Nov. 25, 1890	♀	
Bailey	2179	Reese River, Lander–Nye County line	Nov. 21, 1890	♀	
Bailey	2178	Reese River, Lander–Nye County line	Nov. 21, 1890	♂	
Bailey	2163	Reese River, Lander–Nye County line	Nov. 20, 1890	♂	
Bailey	2148	Reese River, Lander–Nye County line	Nov. 19, 1890	♂	
Bailey	2147	Reese River, Lander–Nye County line	Nov. 19, 1890	♀	
Bailey	2084	Silver Creek	Nov. 8, 1890	♂	
Bailey	2083	Silver Creek	Nov. 8, 1890	♂	
Bailey	2082	Silver Creek	Nov. 8, 1890	♀	
Bailey	2081	Silver Creek	Nov. 8, 1890	♀	
Bailey	2079	Silver Creek	Nov. 7, 1890	♂	

Thomomys monticola monticola
Thomomys monticola

The California Mountain Pocket Gopher was collected in a relatively small area by the Death Valley Expedition biologists, and these areas included Mammoth, Pine City, and the crest of the Sierra near the head of the San Joaquin River. They were collected from an elevation of 9,000 feet down to the adjoining foothills.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	765	Mammoth	July 24, 1891	♀	
Stephens	747	Mammoth	July 22, 1891	♀	
Stephens	777	Pine City	July 26, 1891	♂	
Nelson	1164	San Joaquin River, near head	July 28, 1891	♀	

FAMILY HETEROMYIDAE

Perognathus panamintinus

Perognathus longimembris panamintinus (32), *P. longimembris arizonensis* (15), *P. parvus olivaceus* (1)

In Nevada, the Panamint Pocket Mouse was collected nine miles southwest of the Las Vegas Ranch, 10 miles west of the northern end of Oasis Valley and in the northern portion of that valley, in Pahranagat Valley, at Pahroc Spring, and six miles west of Panaca. Mr. Coville found one individual, likely the result of a predation by a shrike, nine miles southwest of Las Vegas Ranch in a bush on a mesa halfway between Cottonwood Springs and Las Vegas Ranch (i.e., nine miles southwest of Las Vegas Ranch). The Expedition biologists did not collect any others in the Las Vegas Valley.

In California, this taxon was collected at Cottonwood Cañon in the Panamint Mountains, the head of Emigrant Cañon, on Hunter Mountain, Perognathus Flat where they were found in abundance, and at the head of Willow Creek in the Panamint Mountains. For the sake of brevity, only eight of the 18 specimens from Perognathus Flat are identified in the table below.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	909	Cottonwood Cañon, Panamint Mountains	May 26, 1891	♂	
Nelson	914	Cottonwood Cañon, Panamint Mountains	May 27, 1891	♂	
Nelson	903	Cottonwood Cañon, Panamint Mountains	May 24, 1891	♀	
Bailey	2672	Emigrant Cañon, at head of	Apr. 16, 1891	♂	
Bailey	2673	Emigrant Cañon, at head of	Apr. 16, 1891	♂	
Bailey	2675	Emigrant Cañon, at head of	Apr. 16, 1891	♂	
Bailey	2676	Emigrant Cañon, at head of	Apr. 16, 1891	♂	
Nelson	860	Hunter Mountain	May 16, 1891	♀	
Nelson	628	Las Vegas Ranch, 9 miles southwest of	Mar. 9, 1891	♂	
Stephens	202	Oasis Valley, 10 miles west of upper end	Mar. 27, 1891	♂	
Bailey	2878	Oasis Valley, head of valley	June 2, 1891	♀	
Bailey	2843	Pahranagat Valley	May 23, 1891	♀	
Bailey	2842	Pahranagat Valley	May 23, 1891	♂	
Bailey	2866	Pahranagat Valley	May 26, 1891	♂	
Bailey	2838	Pahroc Spring	May 22, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2837	Pahroc Spring	May 22, 1891	♀	
Bailey	2836	Pahroc Spring	May 22, 1891	♂	
Bailey	2835	Pahroc Spring	May 22, 1891	♂	
Bailey	2834	Pahroc Spring	May 22, 1891	♂	
Bailey	2820	Pahroc Spring	May 21, 1891	♂	
Bailey	2818	Panaca, 6 miles west of	May 20, 1891	♀	
Bailey	2815	Panaca, 6 miles west of	May 20, 1891	♂	
Bailey	2819	Panaca, 6 miles west of	May 20, 1891	♀	
Bailey	2816	Panaca, 6 miles west of	May 20, 1891	♂	
Bailey	2817	Panaca, 6 miles west of	May 20, 1891	♂	
Stephens	289	Perognathus Flat	Apr. 16, 1891	♂	
Stephens	296	Perognathus Flat	Apr. 16, 1891	♂	
Bailey	2677	Perognathus Flat	Apr. 16, 1891	♂	
Bailey	2681	Perognathus Flat	Apr. 16, 1891	♂	
Bailey	2682	Perognathus Flat	Apr. 16, 1891	♂	
Stephens	298	Perognathus Flat	Apr. 16, 1891	♂	
Stephens	291	Perognathus Flat	Apr. 16, 1891	♂	
Nelson	874	Willow Creek, Panamint Mountains, head of	May 18, 1891	♂	
Nelson	851	Willow Creek, Panamint Mountains, head of	May 12, 1891	♀	
Nelson	850	Willow Creek, Panamint Mountains, head of	May 12, 1891	♂	

Perognathus panamintinus bangsi
Perognathus longimembris brevinasus (1), *P. longimembris longimembris* (42)

Bangs Pocket Mouse was collected at the locations identified in the table below. It appeared to be rare at Haiwee Meadows and Bishop, and was not uncommon at Olancha and Ash Creek. It was common at Hot Springs Valley, and was abundant in the sand grass at Salt Wells (i.e., Indian Wells) Valley. Variability in capture was demonstrated at the Borax Flat Borax Works, when 30 traps had none of these one night, and 25 traps collected that taxon the next night.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	546	Ash Creek	May 31, 1891	♀	
Stephens	534	Ash Creek	May 30, 1891	♀	
Stephens	547	Ash Creek	May 31, 1891	♀	
Stephens	548	Ash Creek	May 31, 1891	♀	
Stephens	568	Ash Creek	June 2, 1891	♀, juv	
Stephens	922	Banning, 3 miles east of	Sept. 26, 1891	♀	
Stephens	667	Bishop	June 30, 1891	♂	
Stephens	361	Borax Flat Borax Works	Apr. 29, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	325	Borax Flat Water Station	Apr. 23, 1891	♂	
Stephens	324	Borax Flat Water Station	Apr. 23, 1891	♀	
Stephens	443	Haiwee Meadows	May 14, 1891	♂	
Stephens	408	Hot Springs Valley	May 7, 1891	♂	
Stephens	415	Hot Springs Valley	May 8, 1891	♀	
Stephens	407	Hot Springs Valley	May 7, 1891	♀	
Stephens	413	Hot Springs Valley	May 8, 1891	♂	
Stephens	414	Hot Springs Valley	May 8, 1891	♂	
Stephens	405	Hot Springs Valley	May 7, 1891	♀	
Stephens	417	Hot Springs Valley	May 8, 1891	♂	
Stephens	406	Hot Springs Valley	May 7, 1891	♀	
Stephens	416	Hot Springs Valley	May 8, 1891	♂	
Stephens	355	Indian Joe Cañon, mouth	Apr. 27, 1891	♀	
Stephens	347	Indian Joe Cañon, mouth	Apr. 26, 1891	♀	
Stephens	401	Little Lake	May 6, 1891	♂	
Stephens	418	Little Lake	May 9, 1891	♀	
Stephens	430	Little Lake	May 11, 1891	♀	
Stephens	431	Little Lake	May 12, 1891	♀	
Stephens	432	Little Lake	May 12, 1891	♂	
Stephens	397	Little Lake, 10 miles south of	May 5, 1891	♂	
Stephens	680	Moran's	July 4, 1891	♀, juv	
Stephens	689	Moran's	July 6, 1891	♂	
Stephens	514	Olancha	May 23, 1891	♀	
Stephens	374	Raymond Well	May 2, 1891	♂	
Stephens	381	Raymond Well	May 3, 1891	♂	
Stephens	373	Raymond Well	May 2, 1891	♀	
Stephens	375	Raymond Well	May 2, 1891	♂	
Stephens	377	Raymond Well	May 3, 1891	♀	
Stephens	378	Raymond Well	May 3, 1891	♀	
Stephens	382	Raymond Well	May 3, 1891	♂	
Stephens	379	Raymond Well	May 3, 1891	♂	
Stephens	368	Salt Spring Cañon	May 1, 1891	♂	
Stephens	392	Salt Wells Valley, between Raymond Well and Indian Well	May 4, 1891	♂	
Stephens	393	Salt Wells Valley, between Raymond Well and Indian Well	May 4, 1891	♀	

Perognathus nevadensis
Perognathus longimembris nevadensis

Mr. Bailey collected the Nevada Pocket Mouse five miles south of Austin, at Battle Mountain, Blossom Spring south of that town, and on the Reese River near the Lander–Nye County Line. It was common all along

the Reese River Valley, and their little holes with piles of earth were seen all through the sagebrush. They were rather difficult to catch but fond of oatmeal.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2113	Austin, 5 miles south of	Nov. 12, 1890	♂	
Bailey	2071	Battle Mountain	Nov. 4, 1890	♀	
Bailey	2073	Blossom Spring	Nov. 4, 1890	♀	
Bailey	2191	Reese River, Lander–Nye County line	Nov. 23, 1890	♀	
Bailey	2182	Reese River, Lander–Nye County line	Nov. 21, 1890	♂	
Bailey	2132	Reese River, Lander–Nye County line	Nov. 18, 1890	♂	
Bailey	2131	Reese River, Lander–Nye County line	Nov. 18, 1890	♀	
Bailey	2130	Reese River, Lander–Nye County line	Nov. 17, 1890	♀	

Perognathus longimembris
Perognathus inornatus inornatus

With the exceptions of San Emigdio and Three Rivers, the San Joaquin Pocket Mouse's distribution was confined to locations in the San Joaquin Valley as identified in the table below. At Bakersfield, they were common on the dry, bare plain north of that town and their holes were numerous, but few could be caught. Most of their holes that were fresh were filled with dirt throughout the day. At Walker Basin they were difficult to catch and seemed not to care for any bait that was used (oatmeal, cornmeal, or barley). Their young were easier to catch. At Fresno, they were common on a low hill three miles east of town by the hospital where 13 were caught.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1257	Alila	Oct. 8, 1891	♀	
Nelson	1265	Alila	Oct. 9, 1891	♀	
Nelson	1268	Alila	Oct. 10, 1891	♀	
Bailey	3075	Bakersfield	July 18, 1891	♀, imm	
Bailey	3074	Bakersfield	July 18, 1891	♂, imm	
Bailey	3077	Bakersfield	July 18, 1891	♀, imm	
Bailey	3076	Bakersfield	July 18, 1891	♀, imm	
Fisher	791	Bakersfield	July 19, 1891	♀, ad	
Fisher	793	Delano	July 21, 1891	♂, ad	
Bailey	3080	Delano, 6 miles south of town	July 21, 1891	♂	
Nelson	1288	Fort Tejon, 8 miles north of	Oct. 14, 1891	♀	
Bailey	3291	Fresno	Sept. 25, 1891	♀	
Bailey	3283	Fresno	Sept. 23, 1891	♀, imm	
Bailey	3285	Fresno	Sept. 24, 1891	♂	
Bailey	3286	Fresno	Sept. 24, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3287	Fresno	Sept. 24, 1891	♂	
Bailey	3288	Fresno	Sept. 24, 1891	♀, imm	
Bailey	3290	Fresno	Sept. 24, 1891	♀	
Bailey	3282	Fresno	Sept. 23, 1891	♂	
Bailey	3292	Fresno	Sept. 25, 1891	♀	
Bailey	3293	Fresno	Sept. 25, 1891	♀	
Bailey	3294	Fresno	Sept. 25, 1891	♂, imm	
Bailey	3295	Fresno	Sept. 25, 1891	♂, imm	
Bailey	3289	Fresno	Sept. 24, 1891	♀, imm	
Bailey	3421	Lodi	Oct. 17, 1891	♂	
Bailey	3422	Lodi	Oct. 17, 1891	♀	
Bailey	3423	Lodi	Oct. 17, 1891	♀	
Nelson	1368	San Emigdio	Oct. 24, 1891	♂	
Bailey	3263	Three Rivers	Sept. 15, 1891	♀	
Bailey	3274	Three Rivers	Sept. 17, 1891	♀	
Bailey	3050	Walker Basin	July 15, 1891	♀, imm	
Fisher	785	Walker Basin	July 16, 1891	♀, imm	
Fisher	784	Walker Basin	July 16, 1891	♂, imm	
Fisher	775	Walker Basin	July 15, 1891	♀, imm	
Fisher	774	Walker Basin	July 15, 1891	♀, imm	
Bailey	3047	Walker Basin	July 14, 1891	♂, ad	
Bailey	3049	Walker Basin	July 15, 1891	♂, imm	
Bailey	3051	Walker Basin	July 15, 1891	♀, imm	
Bailey	3052	Walker Basin	July 15, 1891	♀, imm	
Bailey	3063	Walker Basin	July 16, 1891	♂, imm	
Bailey	3064	Walker Basin	July 16, 1891	♀, imm	
Bailey	3065	Walker Basin	July 16, 1891	♀, imm	
Bailey	3066	Walker Basin	July 16, 1891	♀, imm	
Bailey	3048	Walker Basin	July 14, 1891	♂, imm	

Perognathus parvus magruderensis
Perognathus parvus olivaceus (31), *P. longimembris panamintinus* (1)

The Mount Magruder Pocket Mouse was primarily found on Mount Magruder in Nevada. It was also collected at the Indian Queen Mine in that state, and the lower portion of Wood Cañon in the Grapevine Mountains, where it was found only in the sagebrush belt.

In California, it was collected at Coso where it was tolerably common and caught at holes under sagebrush and in ledges of rock, Cottonwood Cañon in the Panamint Mountains, Deep Spring–Owens Valley Pass, in the Inyo Mountains near Lone Pine, and near the head of Willow Creek in the Panamint Mountains.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	652	Coso	May 26, 1891	♂	
Palmer	185	Coso	May 28, 1891	♂	
Fisher	597	Coso	May 19, 1891	♀	
Fisher	653	Coso	May 26, 1891	♂	
Fisher	654	Coso	May 27, 1891	♂	
Fisher	655	Coso	May 27, 1891	♀	
Fisher	658	Coso	May 28, 1891	♀	
Fisher	661	Coso	May 29, 1891	♂, ad	
Palmer	184	Coso	May 28, 1891	♂	
Nelson	915	Cottonwood Cañon, Panamint Mountains	May 27, 1891	♀	
Nelson	916	Cottonwood Cañon, Panamint Mountains	May 27, 1891	♀	
Bailey	2943	Deep Springs—Owens Valley Pass	June 10, 1891	♂, ad	
Stephens	730	Indian Queen Mine	July 15, 1891	♀	
Nelson	991	Inyo Mountains, near Lone Pine	June 25, 1891	♀	
Nelson	992	Inyo Mountains, near Lone Pine	June 25, 1891	♀	
Bailey	2901	Mount Magruder	June 6, 1891	♂	
Bailey	2890	Mount Magruder	June 5, 1891	♂	
Bailey	2889	Mount Magruder	June 5, 1891	♀	
Bailey	2894	Mount Magruder	June 5, 1891	♀	
Bailey	2900	Mount Magruder	June 6, 1891	♂	
Bailey	2902	Mount Magruder	June 6, 1891	♂	
Bailey	2903	Mount Magruder	June 6, 1891	♀	
Bailey	2931	Mount Magruder	June 8, 1891	♂	
Bailey	2932	Mount Magruder	June 8, 1891	♀	
Bailey	2899	Mount Magruder	June 6, 1891	♂, ad	
Nelson	817	Willow Creek, Panamint Mountains, head of	May 7, 1891	♂	
Nelson	871	Willow Creek, Panamint Mountains, head of	May 17, 1891	♀	
Nelson	835	Willow Creek, Panamint Mountains, head of	May 9, 1891	♀	
Nelson	834	Willow Creek, Panamint Mountains, head of	May 9, 1891	♂	
Nelson	833	Willow Creek, Panamint Mountains, head of	May 8, 1891		
Nelson	832	Willow Creek, Panamint Mountains, head of	May 8, 1891	♂	
Nelson	971	Wood Cañon	June 10, 1891	♂	

Perognathus parvus olivaceus
Perognathus parvus olivaceus

The Great Basin Pocket Mouse was collected in Nevada on the Reese River along the Lander–Nye County line. It appeared to be common near Austin and south of there to the county line.

In California, it was collected at Benton, Bishop Creek, Casa Diablo Springs, and Moran's ranch.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	706	Benton	July 10, 1891	♀	
Stephens	798	Bishop Creek	Aug. 4, 1891	♀	
Stephens	745	Casa Diablo Springs	July 21, 1891		
Stephens	744	Casa Diablo Springs	July 21, 1891	♀	
Stephens	743	Casa Diablo Springs	July 21, 1891	♂	
Stephens	742	Casa Diablo Springs	July 21, 1891	♀	
Stephens	698	Moran's	July 8, 1891	♂	
Stephens	695	Moran's	July 7, 1891	♀	
Stephens	688	Moran's	July 6, 1891	♀	
Stephens	687	Moran's	July 6, 1891	♀	
Bailey	2181	Reese River, Lander–Nye County line	Nov. 21, 1890	♂	
Bailey	2151	Reese River, Lander–Nye County line	Nov. 20, 1890	♂	
Bailey	2134	Reese River, Lander–Nye County line	Nov. 18, 1890		
Bailey	2135	Reese River, Lander–Nye County line	Nov. 18, 1890	♀	
Bailey	2133	Reese River, Lander–Nye County line	Nov. 18, 1890	♂	

Perognathus formosus
Chaetodipus formosus formosus (8), *C. formosus mohavensis* (137)

Trapping activities indicated the Long-tailed Pocket Mouse's distribution covered an extremely large geographic area. It was collected at 147 locations, which precludes the ability to list the collection locations for that taxon in a tabular format. The numbers below in parentheses quantify the number caught per location.

In Arizona, the taxon was collected along the Virgin River seven miles upstream of Bunkerville (2).

In Utah, it was collected at Saint George (8).

In Nevada, it was collected in Ash Meadows (4), the Great Bend of the Colorado River (3), the east slope of the Charleston Mountains (1), intersection of the Colorado River and Las Vegas Wash (9), the north (1) and south end (1) of Oasis Valley where they were not common, Pahranagat Valley (2), Pahroc Spring (2), in the Pahrump Valley (17) where they were found about the foot of the valley slopes in gravelly soil, and at Thorpe Mill (2) where they were captured in abandoned, run down miners houses.

In California, this taxon was captured at Bennett Wells (2), Bighorn Cañon (2) and Boundary Cañon (4) in the Grapevine Mountains, Cottonwood Cañon in the Panamint Mountains (1), Emigrant Spring (15) where they were captured in abundance, Furnace Creek (3), Grapevine Spring (12) in the Grapevine Mountains where they were common, Hunter Mountain (4), Johnson Cañon in the Panamint Mountains (8), at Little Lake (3) where they were not common, Lone Pine (2), Lone Willow Spring (2) where they were scarce, Mesquite Spring (8) in the Funeral Mountains where they were common from the base of the mountains to the top of highest peak, the north end of Panamint Valley (1), Resting Springs (1), Saline Valley (11), Saratoga Springs (6) where they were quite common, Searl's Garden (5) in the Argus Mountains where they were common, northwest base of Telescope Peak (4), and Wildrose Spring (1).

Perognathus penicillatus
Chaetodipus penicillatus sobrinus

The Desert Pocket Mouse was collected in Arizona along the Virgin River seven miles upstream of Bunkerville. All of the other collection locations were in southern Nevada in Clark County, as identified in the table below. It was common in the Las Vegas Valley and collected at the spring at Las Vegas Ranch. It was found to be extremely abundant in the sand dunes along the bank of the Colorado River, and at night it could be heard uttering a short sharp cricket-like clicking note.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2735	Bend of the Colorado, near Callville	May 5, 1891	♀	
Bailey	2732	Bend of the Colorado, near Callville	May 5, 1891	♂, ad	
Bailey	2734	Bend of the Colorado, near Callville	May 5, 1891	♂	
Bailey	2736	Bend of the Colorado, near Callville	May 5, 1891	♀	
Bailey	2737	Bend of the Colorado, near Callville	May 5, 1891	♀	
Bailey	2738	Bend of the Colorado, near Callville	May 5, 1891	♂	
Bailey	2739	Bend of the Colorado, near Callville	May 5, 1891	♂	
Bailey	2733	Bend of the Colorado, near Callville	May 5, 1891	♂, ad	
Nelson	632	Colorado River	Mar. 11, 1891	♂	
Nelson	640	Colorado River	Mar. 12, 1891	♂	
Nelson	639	Colorado River	Mar. 12, 1891	♂	
Nelson	638	Colorado River	Mar. 12, 1891	♂	
Nelson	637	Colorado River	Mar. 11, 1891	♂	
Nelson	634	Colorado River	Mar. 11, 1891	♂	
Nelson	633	Colorado River	Mar. 11, 1891	♂	
Bailey	2717	Colorado River at Las Vegas Wash	May 4, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2712	Colorado River at Las Vegas Wash	May 4, 1891	♂	
Bailey	2713	Colorado River at Las Vegas Wash	May 4, 1891	♂	
Bailey	2714	Colorado River at Las Vegas Wash	May 4, 1891	♂	
Bailey	2716	Colorado River at Las Vegas Wash	May 4, 1891	♀	
Bailey	2718	Colorado River at Las Vegas Wash	May 4, 1891	♀	
Bailey	2719	Colorado River at Las Vegas Wash	May 4, 1891	♀	
Bailey	2715	Colorado River at Las Vegas Wash	May 4, 1891	♂	
Bailey	2580	Las Vegas Ranch	Mar. 11, 1891		
Bailey	2617	Las Vegas Ranch	Mar. 14, 1891	♂	
Nelson	630	Las Vegas Ranch	Mar. 10, 1891	♀	
Bailey	2578	Las Vegas Ranch	Mar. 10, 1891		
Bailey	2579	Las Vegas Ranch	Mar. 11, 1891	♂	
Bailey	2581	Las Vegas Ranch	Mar. 11, 1891	♂	
Bailey	2607	Las Vegas Ranch	Mar. 13, 1891	♀	
Bailey	2608	Las Vegas Ranch	Mar. 13, 1891	♀	
Bailey	2609	Las Vegas Ranch	Mar. 13, 1891	♀	
Nelson	629	Las Vegas Ranch	Mar. 10, 1891	♂	
Bailey	2616	Las Vegas Ranch	Mar. 14, 1891	♂	
Bailey	2610	Las Vegas Ranch	Mar. 13, 1891	♂	
Bailey	2595	Las Vegas Valley	Mar. 12, 1891	♀	
Bailey	2596	Las Vegas Valley	Mar. 12, 1891		
Bailey	2744	Virgin River, 7 miles above Bunkerville	May 9, 1891	♂, ad	
Bailey	2742	Virgin River, 7 miles above Bunkerville	May 9, 1891	♂, ad	
Bailey	2743	Virgin River, 7 miles above Bunkerville	May 9, 1891	♂, ad	

Perognathus penicillatus angustirostris
Chaetodipus penicillatus angustirostris

Mr. Stephens collected eight specimens of the California Desert Pocket Mouse at Palm Springs on September 28 where they were common.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	943	Palm Springs	Sept. 28, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	942	Palm Springs	Sept. 28, 1891	♀	
Stephens	941	Palm Springs	Sept. 28, 1891	♂	
Stephens	940	Palm Springs	Sept. 28, 1891	♂	
Stephens	939	Palm Springs	Sept. 28, 1891	♀	
Stephens	938	Palm Springs	Sept. 28, 1891	♀	
Stephens	937	Palm Springs	Sept. 28, 1891	♀	
Stephens	936	Palm Springs	Sept. 28, 1891	♂	

Perognathus stephensi
Chaetodipus penicillatus stephensi

Mr. Stephens collected two specimens of the Stephens Pocket Mouse in Mesquite Valley, the northwest arm of Death Valley in Inyo County, California on April 6.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	259	Mesquite Valley	Apr. 6, 1891	♀	
Stephens	258	Mesquite Valley	Apr. 6, 1891	♂	

Perognathus fallax
Chaetodipus fallax fallax

Mr. Stephens collected 10 individuals of the Short-eared California Pocket Mouse in Reche Cañon between September 22 and 24. They were rather common there in the cactus beds.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	913	Reche Cañon	Sept. 24, 1891	♀	
Stephens	912	Reche Cañon	Sept. 24, 1891	♀	
Stephens	911	Reche Cañon	Sept. 24, 1891	♀	
Stephens	899	Reche Cañon	Sept. 23, 1891	♀	
Stephens	898	Reche Cañon	Sept. 23, 1891	♀	
Stephens	888	Reche Cañon	Sept. 22, 1891		
Stephens	887	Reche Cañon	Sept. 22, 1891	♀	
Stephens	886	Reche Cañon	Sept. 22, 1891	♀	
Stephens	885	Reche Cañon	Sept. 22, 1891	♀	
Stephens	884	Reche Cañon	Sept. 22, 1891	♂	

Perognathus californicus dispar
Chaetodipus californicus dispar (33), *C. californicus marinensis* (1), *C. californicus ochrus* (7)

The Allen Pocket Mouse was primarily captured in the coastal counties of southern California. These locations included Carpinteria, near Nordhoff where they were common, 12 miles west of San Luis Obispo, near

San Simeon, at Santa Paula, and near the Ventura River. They were found from San Simeon to Carpinteria in brushy hillsides on south slopes. Their holes were often found on open ground but by far the greater number of them were effectually concealed under dense patches of bushes. They were fond of foraging about the base of large rocks or ledges.

These mice were also captured at more inland locations that included Fort Tejon, Pruit's Ranch on the South Fork of the Kern River where it was caught on a bank between the brush of the river flats and an oat field, San Emigdio where it was found living on hillsides in brushy places at the upper limit of the plain region, and Three Rivers. The ones at Fort Tejon were captured only among rocks on the oak covered slopes of the hills, and none of the holes on the open ground or bare hillsides seemed to be occupied by this taxon.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1655	Carpinteria	Dec. 19, 1891	♂	
Nelson	1656	Carpinteria	Dec. 19, 1891	♂	
Nelson	1657	Carpinteria	Dec. 19, 1891	♂	
Nelson	1658	Carpinteria	Dec. 19, 1891	♀	
Palmer	279	Fort Tejon	July 11, 1891	♀	
Palmer	271	Fort Tejon	Jul. 9, 1891	♀	
Palmer	280	Fort Tejon	July 11, 1891	♂, imm	
Nelson	1713	Nordhoff, near to	Dec. 24, 1891	♂	
Nelson	1725	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1742	Nordhoff, near to	Dec. 26, 1891	♀	
Nelson	1726	Nordhoff, near to	Dec. 25, 1891	♀	
Fisher	735	Pruit's Ranch	July 6, 1891	♀, ad	
Nelson	1354	San Emigdio	Oct. 22, 1891	♀	
Nelson	1375	San Emigdio	Oct. 25, 1891	♂	
Nelson	1366	San Emigdio	Oct. 24, 1891	♂	
Nelson	1367	San Emigdio	Oct. 24, 1891	♂	
Nelson	1548	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	
Nelson	1549	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	
Nelson	1529	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1550	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♂	
Nelson	1551	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1552	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	
Nelson	1528	San Luis Obispo, 12 miles west of	Nov. 26, 1891	♀	
Nelson	1553	San Luis Obispo, 12 miles west of	Nov. 27, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1510	San Simeon, near to	Nov. 21, 1891	♀	
Nelson	1774	Santa Paula	Jan. 2, 1892	♀	
Fisher	977	Three Rivers	Sept. 15, 1891	♀, ad	
Fisher	998	Three Rivers	Sept. 17, 1891	♂	
Fisher	986	Three Rivers	Sept. 16, 1891	♀, ad	
Fisher	825	Three Rivers	July 28, 1891	♂	
Bailey	3273	Three Rivers	Sept. 17, 1891	♀	
Bailey	3272	Three Rivers	Sept. 16, 1891	♂	
Bailey	3262	Three Rivers	Sept. 15, 1891	♂	
Fisher	987	Three Rivers	Sept. 16, 1891	♂, imm	
Nelson	1703	Ventura River, near to	Dec. 23, 1891	♂	
Nelson	1689	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1690	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1692	Ventura River, near to	Dec. 21, 1891	♂	
Nelson	1704	Ventura River, near to	Dec. 23, 1891	♂	
Nelson	1705	Ventura River, near to	Dec. 23, 1891	♀	
Nelson	1691	Ventura River, near to	Dec. 21, 1891	♂	

Perognathus spinatus
Chaetodipus spinatus rufescens

One Spiny Pocket Mouse was collected during the Expedition, and it was a male captured in sand knolls in very barren land at Palm Springs on September 27.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	927	Palm Springs	Sept. 27, 1891	♂	

Dipodomys heermanni swarthi
Dipodomys heermanni swarthi (4), *D. heermanni jolonensis* (1)

The Carrizo Plain Kangaroo Rat was captured by Mr. Nelson at La Panza, Pozo, and San Emigdio.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1390	La Panza	Oct. 28, 1891	♂	
Nelson	1417	Pozo	Oct. 31, 1891	♀	
Nelson	1416	Pozo	Oct. 31, 1891	♀	
Nelson	1411	Pozo	Oct. 30, 1891	♂	
Nelson	1365	San Emigdio	Oct. 24, 1891	♂	

Dipodomys morroensis
Dipodomys heermanni morroensis

The Morro Bay Kangaroo Rat was only collected at Morro and at a location 12 miles west of San Luis Obispo. Mr. Nelson made those collections in November. It was limited to the lower and more sandy strips of country bordering the coast and not found above 300 or 400 feet in altitude. They were very scarce from San Simeon to Morro but fairly swarmed on the bush-covered sand dunes about the head of Morro Bay where their trails and holes were seen everywhere on open ground and among dense bushes (Nelson 1891-26). They occurred in the former location in the sandy flats along the Santa Maria River from the sea up to near Sisquoc.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1466	Morro	Nov. 11, 1891	♀	
Nelson	1465	Morro	Nov. 11, 1891	♀	
Nelson	1464	Morro	Nov. 11, 1891	♀	
Nelson	1463	Morro	Nov. 11, 1891	♀	
Nelson	1462	Morro	Nov. 11, 1891	♂	
Nelson	1458	Morro	Nov. 10, 1891	♀	
Nelson	1457	Morro	Nov. 10, 1891	♀	
Nelson	1456	Morro	Nov. 10, 1891	♂	
Nelson	1455	Morro	Nov. 10, 1891	♂	
Nelson	1454	Morro	Nov. 10, 1891	♂	
Nelson	1563	San Luis Obispo, 12 miles west of	Nov. 29, 1891	♀	
Nelson	1562	San Luis Obispo, 12 miles west of	Nov. 29, 1891	♂	

Dipodomys mohavensis
Dipodomys panamintinus mohavensis

The Mohave Kangaroo Rat was collected at Ash Creek, Coso where they were tolerably common, Haiwee Meadows, three miles northeast of Hesperia, near Liebre Ranch, at Olancha where they were rather common, and Pruit's Ranch on the South Fork of the Kern River 25 miles from Kernville where they were common.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	535	Ash Creek	May 30, 1891	♀	
Stephens	543	Ash Creek	May 31, 1891	♀	
Stephens	565	Ash Creek	June 2, 1891	♂, juv	
Stephens	557	Ash Creek	June 1, 1891	♀	
Stephens	545	Ash Creek	May 31, 1891	♂	
Stephens	544	Ash Creek	May 31, 1891	♀	
Fisher	660	Coso	May 29, 1891	♂, ad	
Fisher	657	Coso	May 28, 1891	♀	
Fisher	631	Coso	May 23, 1891	♂	
Fisher	603	Coso	May 20, 1891	♀	
Palmer	151	Coso	May 20, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	157	Coso	May 22, 1891	♀	
Palmer	158	Coso	May 22, 1891	♂	
Palmer	164	Coso	May 23, 1891	♂	
Fisher	622	Coso	May 22, 1891	♀	
Stephens	449	Haiwee Meadows	May 14, 1891	♀	
Stephens	448	Haiwee Meadows	May 14, 1891	♂	
Stephens	447	Haiwee Meadows	May 14, 1891	♂	
Stephens	440	Haiwee Meadows	May 13, 1891	♂	
Stephens	874	Hesperia, 3 miles northeast of	Sept. 15, 1891	♂	
Palmer	204	Liebre Ranch, near to	June 27, 1891	♂	
Stephens	472	Olancha	May 18, 1891	♂	
Stephens	454	Olancha	May 16, 1891	♂	
Stephens	488	Olancha	May 20, 1891	♂	
Stephens	489	Olancha	May 20, 1891	♀	
Stephens	504	Olancha	May 21, 1891	♀	
Stephens	505	Olancha	May 21, 1891	♂	
Stephens	453	Olancha	May 16, 1891	♀	
Bailey	3031	Pruit's Ranch	Jul. 9, 1891	♂	
Bailey	3036	Pruit's Ranch	July 10, 1891	♂	
Bailey	3035	Pruit's Ranch	July 10, 1891	♂	
Bailey	3034	Pruit's Ranch	Jul. 9, 1891	♀, imm	
Fisher	759	Pruit's Ranch	July 10, 1891	♀	
Fisher	755	Pruit's Ranch	July 8, 1891	♀	

Dipodomys leucogenys
Dipodomys panamintinus leucogenys

The Pale-faced Kangaroo Rat was only collected at Alvord and a location six miles north of Independence. Those collections were made by Mr. Stephens in late June.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	656	Alvord	June 27, 1891	♂	
Stephens	646	Independence, 6 miles north of	June 25, 1891	♀	

Dipodomys panamintinus
Dipodomys panamintinus panamintinus

The Panamint Kangaroo Rat was collected by Mr. Nelson in the *Artemesia tridentata* belt in the Panamint Mountains in Cottonwood Cañon and at the head of Willow Creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	921	Cottonwood Cañon, Panamint Mountains	May 27, 1891	♀	
Nelson	920	Cottonwood Cañon, Panamint Mountains	May 27, 1891	♂	
Nelson	913	Cottonwood Cañon, Panamint Mountains	May 26, 1891	♀	
Nelson	912	Cottonwood Cañon, Panamint Mountains	May 26, 1891	♂	
Nelson	878	Willow Creek, Panamint Mountains, head of	May 18, 1891	♂	
Nelson	855	Willow Creek, Panamint Mountains, head of	May 12, 1891	♂	
Nelson	854	Willow Creek, Panamint Mountains, head of	May 12, 1891	♂	
Nelson	853	Willow Creek, Panamint Mountains, head of	May 12, 1891	♂	
Nelson	852	Willow Creek, Panamint Mountains, head of	May 12, 1891	♀	
Nelson	846	Willow Creek, Panamint Mountains, head of	May 10, 1891	♀	
Nelson	845	Willow Creek, Panamint Mountains, head of	May 10, 1891	♂	
Nelson	844	Willow Creek, Panamint Mountains, head of	May 10, 1891	♂	
Nelson	838	Willow Creek, Panamint Mountains, head of	May 9, 1891	♀	
Nelson	837	Willow Creek, Panamint Mountains, head of	May 9, 1891	♂	
Nelson	836	Willow Creek, Panamint Mountains, head of	May 9, 1891	♂	

Dipodomys ordii columbianus
Dipodomys ordii columbianus

The Ord Kangaroo Rat was collected only in Nevada. Mr. Bailey captured it at the junction of the Reese River and Indian Creek, and on the Reese River at the Lander–Nye County line.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2209	Reese River, at junction of Indian Creek	Nov. 27, 1890	♂	
Bailey	2208	Reese River, at junction of Indian Creek	Nov. 27, 1890	♂	
Bailey	2127	Reese River, Lander–Nye County line	Nov. 16, 1890	♂	

Dipodomys merriami merriami
Dipodomys merriami merriami

A total of 394 Merriam Kangaroo Rats were collected by Death Valley Expedition biologists across Arizona, California, and Nevada, making it the second most commonly collected mammal. A tabular summary of those locations is not provided below for the sake of brevity. Instead, the collection locations are identified below and the number of collections at each locality is quantified in parentheses.

In Arizona, this taxon was collected at Beaver Dam (1).

In Nevada, the taxon was collected at or near Ash Meadows (36), half way between Ash Meadows and Oasis Valley (1), at Callville (1), on the east slope of the Charleston Mountains (5), on the Colorado River (1), Columbus (2), Corn Creek (2), at Cottonwood Springs in the Las Vegas Valley (4) where they were very abundant, Las Vegas Ranch (4) where they were common, the downstream end of Oasis Valley (1) where they were common, in the Pahranagat Valley (3), at Pahroc Spring (5), five localities in the Pahrump Valley (68), the base of Table Mountain (2), and Thorpe Mill (2) where they were common.

In California, this kangaroo rat taxon was collected at the Alabama Hills (3), Amargosa Borax Works (2), at the Borax Flat Water Station (2), Daggett (11), Darwin (1), Furnace Creek (49) where they were very abundant, Granite Springs (4), 15 miles west (2) of and 3 miles northeast (2) of Hesperia, Hot Springs Valley (2), at and near the Hot Springs in Panamint Valley (22) where they were numerous, the mouth of Indian Joe Cañon (2), Keeler (24), Little Lake (3) where they were common, Lone Pine (13), Lone Willow Spring (44), Olancha (7) where they were rather common, Raymond Well (2) in Salt Wells (i.e., Indian Wells) Valley where they were common, Resting Springs (44) where they were common, Saratoga Springs (2), and Twelve Mile Spring (10).

Dipodomys merriami parvus
Dipodomys merriami parvus

Mr. Stephens collected one male and one female San Bernardino Kangaroo Rat at Reche Cañon in September.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	918	Reche Cañon	Sept. 24, 1891	♂	
Stephens	917	Reche Cañon	Sept. 24, 1891	♀	

Dipodomys merriami simiolus
Dipodomys merriami merriami

The Allied Kangaroo Rat was collected only by Mr. Stephens and he collected two males at San Gorgonio Pass.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	947	San Gorgonio Pass	Sept. 29, 1891	♂	
Stephens	946	San Gorgonio Pass	Sept. 29, 1891	♂	

Dipodomys merriami vulcani
Dipodomys merriami frenatus

The kangaroo rat taxon *Dipodomys merriami vulcani* was twice collected at Saint George in May by Mr. Bailey.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2779	Saint George	May 14, 1891	♂	
Bailey	2778	Saint George	May 14, 1891	♂	

Dipodomys nitratoides exilis
Dipodomys nitratoides exilis

The Fresno Kangaroo Rat was caught only at Fresno. Mr. Bailey secured five specimens there on September 23. They were common on sandy ridges along the railroad tracks west of town.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3281	Fresno	Sept. 23, 1891	♀, imm	
Bailey	3280	Fresno	Sept. 23, 1891	♂, imm	
Bailey	3279	Fresno	Sept. 23, 1891	♂, imm	
Bailey	3278	Fresno	Sept. 23, 1891	♂, imm	
Bailey	3277	Fresno	Sept. 23, 1891	♂	

Dipodomys nitratoides nitratoides
Dipodomys nitratoides nitratoides (16), *D. nitratoides brevinasus* (1)

The Tipton Kangaroo Rat's geographic range was limited to the San Joaquin Valley area. It was collected at Adobe Station, Alila, Bakersfield where it was abundant on the dry plain north of town, and at Poso. It was abundant from near Tulare south to the base of foothills south of Buena Vista Lake (Nelson 1891-25).

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1284	Adobe Station	Oct. 13, 1891	♀	
Nelson	1281	Adobe Station	Oct. 13, 1891	♂	
Nelson	1282	Adobe Station	Oct. 13, 1891	♂	
Nelson	1283	Adobe Station	Oct. 13, 1891	♀	
Nelson	1261	Alila	Oct. 9, 1891	♂	
Nelson	1264	Alila	Oct. 9, 1891	♀	
Nelson	1263	Alila	Oct. 9, 1891	♀	
Bailey	1662	Alila	Oct. 9, 1891	♂	
Bailey	3071	Bakersfield	July 18, 1891	♀	
Bailey	3070	Bakersfield	July 18, 1891	♂	
Bailey	3069	Bakersfield	July 18, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	790	Bakersfield	July 19, 1891	♂, ad	
Bailey	3072	Bakersfield	July 18, 1891	♀	
Bailey	3073	Bakersfield	July 18, 1891	♀	
Fisher	789	Bakersfield	July 19, 1891	♂, ad	
Bailey	3068	Bakersfield	July 18, 1891	♂, ad	
Nelson	1274	Poso	Oct. 11, 1891	♂	

Dipodomys agilis agilis
Dipodomys agilis agilis

One Gambel Kangaroo Rat was collected at Cajon Pass, seven were collected near Nordhoff, and five were collected in Reche Cañon where they were common around the cactus beds.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	880	Cajon Pass	Sept. 18, 1891	♀	
Nelson	1741	Nordhoff, near to	Dec. 26, 1891	♀	
Nelson	1740	Nordhoff, near to	Dec. 26, 1891	♀	
Nelson	1739	Nordhoff, near to	Dec. 26, 1891	♀	
Nelson	1738	Nordhoff, near to	Dec. 26, 1891	♀	
Nelson	1737	Nordhoff, near to	Dec. 26, 1891	♂	
Nelson	1724	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1714	Nordhoff, near to	Dec. 24, 1891	♀	
Stephens	949	Reche Cañon	Oct. 1, 1891	♀	
Stephens	948	Reche Cañon	Oct. 1, 1891	♀	
Stephens	916	Reche Cañon	Sept. 24, 1891	♀	
Stephens	915	Reche Cañon	Sept. 24, 1891	♀	
Stephens	883	Reche Cañon	Sept. 22, 1891	♂	

Dipodomys agilis perplexus
Dipodomys agilis perplexus

True to its name, the Walker Basin Kangaroo Rat was only collected in that basin. A total of sixteen of these animals were collected there between July 15 and 16. They were common among brush, weeds, and trees in the middle of that basin. The soil is sandy and soft where they live. Only one of their holes was found away from brush and that was near an old house near a grassy part of that basin. The holes they lived in were filled with earth during the day. They seemed to be fond of barley and oatmeal.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3062	Walker Basin	July 16, 1891	♂	
Bailey	3054	Walker Basin	July 15, 1891	♀	
Bailey	3055	Walker Basin	July 15, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3056	Walker Basin	July 15, 1891	♀	
Bailey	3057	Walker Basin	July 15, 1891	♀	
Bailey	3058	Walker Basin	July 15, 1891	♀	
Bailey	3053	Walker Basin	July 15, 1891	♂, ad	
Bailey	3061	Walker Basin	July 16, 1891	♂	
Fisher	783	Walker Basin	July 16, 1891	♀	
Fisher	776	Walker Basin	July 15, 1891	♀, ad	
Fisher	777	Walker Basin	July 15, 1891	♀, ad	
Fisher	778	Walker Basin	July 15, 1891	♀	
Fisher	780	Walker Basin	July 16, 1891	♂, ad	
Fisher	781	Walker Basin	July 16, 1891	♂	
Fisher	782	Walker Basin	July 16, 1891	♀	
Bailey	3059	Walker Basin	July 15, 1891	♀	

Dipodomys microps
Dipodomys microps microps

The Small-faced Kangaroo Rat was collected over a relatively small geographic range. In Owens Valley, they were collected at the Alabama Hills, Big Pine, Bishop, and Lone Pine. They were also collected in Deep Spring Valley.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2300	Alabama Hills	Dec. 18, 1890	♂	
Nelson	139	Alabama Hills	Dec. 22, 1890	♂	
Nelson	138	Alabama Hills	Dec. 22, 1890	♂	
Nelson	127	Alabama Hills	Dec. 21, 1890	♀	
Nelson	126	Alabama Hills	Dec. 21, 1890	♀	
Bailey	2232	Big Pine	Dec. 10, 1890	♂	
Stephens	672	Bishop	July 1, 1891	♀	
Bailey	2230	Deep Spring Valley	Dec. 8, 1890	♀	
Bailey	2229	Deep Spring Valley	Dec. 8, 1890	♀	
Bailey	2307	Lone Pine	Dec. 24, 1890	♂	
Nelson	157	Lone Pine	Dec. 27, 1890	♂	

Dipodomys microps celsus
Dipodomys microps celsus

This subspecies of the Chisel-toothed Kangaroo Rat was only collected in Utah. Specimens were collected in Saint George by Mr. Bailey on May 15 or 16.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2805	Saint George	May 16, 1891	♂, imm	
Bailey	2804	Saint George	May 16, 1891	♀	
Bailey	2786	Saint George	May 15, 1891	♀, imm	

Dipodomys microps centralis
Dipodomys microps centralis

This subspecies of the Chisel-toothed Kangaroo Rat was collected by Mr. Bailey in Nevada. He collected that taxon five miles south of Austin, at Battle Mountain where they were common, and along the Reese River near the Lander–Nye County line.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2124	Austin, 5 miles south of	Nov. 13, 1890	♀	
Bailey	2110	Austin, 5 miles south of	Nov. 11, 1890	♂	
Bailey	2109	Austin, 5 miles south of	Nov. 11, 1890	♂	
Bailey	2108	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2068	Battle Mountain	Nov. 4, 1890	♂	
Bailey	2139	Reese River, Lander–Nye County line	Nov. 18, 1890	♀	
Bailey	2138	Reese River, Lander–Nye County line	Nov. 18, 1890	♂	
Bailey	2137	Reese River, Lander–Nye County line	Nov. 18, 1890	♀	
Bailey	2136	Reese River, Lander–Nye County line	Nov. 18, 1890	♀	

Dipodomys microps occidentalis
Dipodomys microps occidentalis

This subspecies of the Chisel-toothed Kangaroo Rat was also only collected in Nevada. Specimens were taken at Ash Meadows, Bighorn Cañon, the northern end of Oasis Valley, in Pahranagat Valley, four locations in the Pahrump Valley, the base of Table Mountain north of Ash Meadows, and in Wood Cañon where they were common.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	100	Ash Meadows	Mar. 4, 1891	♀	
Stephens	101	Ash Meadows	Mar. 4, 1891	♂	
Nelson	952	Bighorn Cañon	June 7, 1891	♀	
Bailey	2874	Oasis Valley, head of valley	June 2, 1891	♀, imm	
Bailey	2872	Oasis Valley, head of valley	June 2, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2873	Oasis Valley, head of valley	June 2, 1891	♂	
Bailey	2858	Pahranagat Valley	May 26, 1891	♂, ad	
Nelson	542	Pahrump Valley	Feb. 26, 1891	♀	
Nelson	543	Pahrump Valley	Feb. 26, 1891	♀	
Nelson	547	Pahrump Valley	Feb. 27, 1891	♂	
Nelson	548	Pahrump Valley	Feb. 27, 1891	♀	
Nelson	549	Pahrump Valley	Feb. 27, 1891	♀	
Palmer	111	Pahrump Valley	Feb. 28, 1891	♂	
Palmer	110	Pahrump Valley	Feb. 28, 1891	♀	
Palmer	112	Pahrump Valley	Feb. 28, 1891	♂, imm	
Stephens	59	Pahrump Valley, southwest side	Feb. 27, 1891	♂	
Palmer	109	Pahrump Valley, west side	Feb. 26, 1891	♀	
Nelson	518	Pahrump Valley, west side	Feb. 23, 1891	♂	
Fisher	256	Pahrump Valley, west side	Feb. 24, 1891	♂	
Fisher	258	Pahrump Valley, west side	Feb. 25, 1891	♀	
Fisher	263	Pahrump Valley, west side	Feb. 26, 1891	♂	
Palmer	108	Pahrump Valley, west side	Feb. 26, 1891	♂	
Nelson	528	Pahrump Valley, west side	Feb. 25, 1891	♀	
Nelson	519	Pahrump Valley, west side	Feb. 24, 1891	♀	
Fisher	279	Pahrump Valley, west side, near Stewart Well	Feb. 28, 1891	♀	
Stephens	112	Table Mountain, base of	Mar. 7, 1891	♂	
Stephens	113	Table Mountain, base of	Mar. 8, 1891	♀	
Nelson	969	Wood Cañon	June 10, 1891	♀	
Nelson	970	Wood Cañon	June 10, 1891	♀	

Dipodomys levipes
Dipodomys microps levipes

The Light-footed Kangaroo Rat was only collected in the vicinity of the Panamint Mountains. It was collected at Cottonwood Creek, Darwin, Emigrant Spring, the head of Emigrant Cañon, and at Perognathus Flat.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	904	Cottonwood Creek, Panamint Mountains	May 24, 1891	♂	
Nelson	170	Darwin	Jan. 1, 1891	♀	
Bailey	2668	Emigrant Cañon, at head of	Apr. 16, 1891	♂	
Bailey	2655	Emigrant Spring	Apr. 15, 1891	♀	
Bailey	2654	Emigrant Spring	Apr. 15, 1891	♀	
Stephens	288	Perognathus Flat	Apr. 16, 1891	♂	
Stephens	287	Perognathus Flat	Apr. 16, 1891	♂	

Dipodomys deserti
Dipodomys deserti deserti

A total of 230 Big Desert Kangaroo Rats were collected by Death Valley Expedition biologists across Arizona, California, and Nevada. This was the fourth most commonly collected mammal during that expedition. The locations where it was collected are identified below, along with the number of collections per locality in parentheses.

In Arizona, this taxon was collected at Beaver Dam (1) and along the Virgin River seven miles upstream of Bunkerville (2).

In Nevada, the taxon was collected at Ash Meadows (38), 15 miles north of Ash Meadows (3), half way between Ash Meadows and Oasis Valley (2), at Callville (1), on the Colorado River near its intersection with the Las Vegas Wash (4) where they were common, at the Columbus salt marsh (2), near the southern end of Oasis Valley (1) where they were common, at three locations in Pahrump Valley (16) where they were abundant in sandy or loose soil except in places subject to flooding by rain, the base of Table Mountain (4), and Thorpe Mill (4) where they were common.

In California, Big Desert Kangaroo Rats were collected six miles south of Alvord (2), at the Amargosa Borax Works (3) where they were common, along the Amargosa River near Saratoga Springs (1), Bennett Wells (43), the Borax Flat Borax Works (3), Borax Flat Water Station (2), Furnace Creek (23) where they were taken in sandy soil, three miles northeast of Hesperia (1), at or near the Hot Springs in Panamint Valley (11), at the mouth of Indian Joe Cañon (2), at Keeler on the shore of Owens Lake (13), Lone Pine (5) where they were abundant, Lone Willow Spring (6) where they were abundant, Mesquite Valley (3) the northeastern arm of Death Valley, at or near Mesquite Well (4), Palm Springs (1) where they were common, Raymond Well (4) where they were abundant, Resting Springs (8), Saratoga Springs (8), and Twelve Mile Spring (8).

Microdipodops megacephalus megacephalus
Microdipodops megacephalus megacephalus

Two specimens of the Dark Kangaroo Mouse were collected by Mr. Bailey in the latter part of November in 1890 along the Reese River near the Lander–Nye County line. They were collected 33 miles south of the town of Austin.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2203	Reese River, Lander–Nye County line	Nov. 25, 1890	♂	
Bailey	2183	Reese River, Lander–Nye County line	Nov. 21, 1890	♂	

FAMILY ZAPODIDAE

Zapus trinotatus alleni
Zapus princeps pacificus

The Allen's Jumping Mouse was rarely collected. It was captured at Dick's Ranch on the South Fork of the Kern River where one individual was scared out of thick weeds on an island in the river and Mr. Bailey caught it

in his hands, on the East Fork of the Kaweah River at Mineral King, and at Mammoth where Mr. Stephens caught one in a steel trap that was set in a vole run in a wet meadow.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3205	Dick's Ranch	Aug. 14, 1891	♀	
Bailey	3194	Kaweah River, East Fork, Mineral King	Aug. 10, 1891	♂	
Bailey	3189	Kaweah River, East Fork, Mineral King	Aug. 8, 1891	♂, ad	
Stephens	761	Mammoth	July 23, 1891	♂	

FAMILY ERETHIZONTIDAE

Erethizon epixanthum epixanthum
Erethizon dorsatum epixanthum

The Yellow-haired Porcupine was not directly observed or collected by the Death Valley Expedition biologists. At Big Cottonwood Meadows, however, Mr. Dutcher noted the trees they had gnawed the bark from were common from 8,475 feet on a south slope up to near timberline. In the southern end of the Sierra, Mr. Bailey noted that though a diligent search was made, none of this species was observed. Their gnawings could frequently be seen, however, on the trees in the vicinity of where he camped.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher		Big Cottonwood Meadows			OSTB June 15 & Sept. 15, 1891
Bailey		Sierra Nevada, southern end			OSTB Aug. 1 & Sept. 30, 1891

FAMILY APLODONTIDAE

Aplodontia rufa californica
Aplodontia rufa californica

The Expedition biologists did not observe or collect a Sierra Mountain Beaver during their fieldwork. A Mr. Clark informed Mr. Nelson, however, that when Clark lived at Wawona some years before 1891, he frequently saw the burrows of this animal in wet ground about the heads of small gulches and was able to tell their holes from those of other animals by the little piles of grass or hay that they made a custom of gathering and placing in front of their holes (Nelson 1891-27). In spring of 1891, a Mr. Belding saw a mounted specimen of *Aplodontia* at a tollhouse on the road from Stockton to Yosemite.

FAMILY SCIURIDAE

Marmota flaviventris parvula
Marmota flaviventris flaviventris

The Nevada Marmot was present in the White Mountains and Mr. Nelson secured several specimens there in July. Between 9,500 and 11,500 feet, he found them to be rather common, particularly about the base of the highest peaks where they literally swarmed in some places. They usually lived in or among rocks or large boulders.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1109	White Mountains, summit	July 15, 1891	♂	
Nelson	1108	White Mountains, summit	July 15, 1891	♀	
Nelson	1107	White Mountains, summit	July 15, 1891	♂	
Nelson	1106	White Mountains, summit	July 15, 1891	♀	
Nelson	1099	White Mountains, summit	July 13, 1891	♂	
Nelson	1089	White Mountains, summit	July 10, 1891	♂	
Nelson	1081	White Mountains, summit	July 8, 1891	♂	

Marmota flaviventris sierrae
Marmota flaviventris flaviventris

As identified in the table below, the Southern Sierra Marmot was collected at several locations in the Sierra Nevada. They were common at Monache Meadows. At the head of the San Joaquin River, they were very abundant and found between 8,000 feet and timberline. At Mineral King, they were initially encountered at ~ 7,200 feet and were common up to timberline. At Big Cottonwood Meadows, they were very abundant in the piles of granite rocks that were strewn across the country there. Almost any evening or morning there, they could be seen airing themselves on the rock points adjacent to their homes and giving utterance from time to time with their peculiar whistle. They were not very common at Bishop Creek. Mr. Stephens saw them above Onion Valley and at the site of "Kearsarge City" in the latter part of June.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	161	Big Cottonwood Meadows	Aug. 5, 1891	♀	
Dutcher	12	Big Cottonwood Meadows	June 29, 1891	♂	
Dutcher	105	Big Cottonwood Meadows	July 17, 1891	♀	
Dutcher	110	Big Cottonwood Meadows	July 19, 1891	♀	
Palmer	315	Big Meadows	Aug. 9, 1891	♂	
Fisher	896	Big Meadows	Aug. 9, 1891	♂, imm	
Palmer	314	Big Meadows	Aug. 9, 1891	♂	
Bailey	3222	Big Whitney Meadows	Aug. 20, 1891	♂	
Bailey	3242	Big Whitney Meadows	Sept. 3, 1891	♀	
Stephens	818	Bishop Creek	Aug. 9, 1891	♀	
Stephens	819	Bishop Creek	Aug. 9, 1891	♀	
Bailey	3173	Kaweah River, East Fork, Mineral King	Aug. 4, 1891	♀, ad	
Nelson	1151	Mammoth	July 24, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	966	Mineral King	Sept. 10, 1891	♂, ad	
Bailey	3136	Mineral King	July 30, 1891	♂, imm	
Stephens	530	Monache Meadows	May 25, 1891	♀	
Dutcher	97	Mulkey Meadows	July 16, 1891	♀, juv	
Dutcher	74	Mulkey Meadows	July 11, 1891	♂, juv	
Dutcher	147	Mulkey Meadows	July 29, 1891	♀	
Stephens	847	Mulkey Meadows	Aug. 26, 1891	♂	
Dutcher	67	Mulkey Meadows	July 10, 1891	♀	
Fisher	932	Round Valley	Aug. 28, 1891	♀, imm	
Fisher	931	Round Valley	Aug. 28, 1891	♀, imm	
Stephens	785	San Joaquin River, near head	July 28, 1891	♀, juv	
Nelson	1185	San Joaquin River, near head	July 30, 1891	♀	
Nelson	1173	San Joaquin River, near head	July 28, 1891	♂	
Stephens		Onion Valley			OSTB June 18 & 23, 1891

Citellus townsendii mollis
Urocitellus mollis mollis

The Piute Ground Squirrel was collected by Death Valley Expedition members in Nevada at Indian Queen and on Mount Magruder.

In California, the taxon was captured 10 miles west of, or 6 miles north of, the town of Benton; Long Valley in Mono County near the northern end of Owens Valley; and at Moran's.

Mr. Stephens found this species to be a common from Benton north to the Indian Queen Mine at the northern end of the White Mountains. He also saw them from Benton westerly across the plateau country at an altitude of 7,000 to 7,800 feet to the west side of Owens River at the base of the Sierra.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	794	Benton, 10 miles west of	July 31, 1891	♀	
Stephens	709	Benton, 6 miles north of	July 10, 1891	♂	
Stephens	708	Benton, 6 miles north of	July 10, 1891	♂	
Stephens	736	Benton, 6 miles north of	July 16, 1891	♂	
Stephens	737	Benton, 6 miles north of	July 16, 1891	♂	
Stephens	738	Benton, 6 miles north of	July 16, 1891	♂	
Stephens	718	Indian Queen	July 12, 1891	♂	
Stephens	716	Indian Queen	July 11, 1891	♀	
Stephens	715	Indian Queen	July 11, 1891	♂	
Nelson	1111	Long Valley (Mono County)	July 20, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	694	Moran's	July 6, 1891	♂	
Bailey	2916	Mount Magruder	June 7, 1891	♀, ad	
Bailey	2904	Mount Magruder	June 6, 1891	♂, ad	
Bailey	2895	Mount Magruder	June 5, 1891	♀	
Bailey	2896	Mount Magruder	June 5, 1891	♂, juv	
Bailey	2897	Mount Magruder	June 5, 1891	♂, juv	
Bailey	2898	Mount Magruder	June 5, 1891	♀, ad	
Bailey	2905	Mount Magruder	June 6, 1891	♀, ad	
Bailey	2906	Mount Magruder	June 6, 1891	♀, ad	
Bailey	2907	Mount Magruder	June 6, 1891	♂, juv	
Bailey	2908	Mount Magruder	June 6, 1891	♀, juv	
Bailey	2915	Mount Magruder	June 7, 1891	♂, ad	
Bailey	2917	Mount Magruder	June 7, 1891	♀, ad	
Bailey	2909	Mount Magruder	June 6, 1891	♂, ad	

Citellus beldingi beldingi
Urocitellus beldingi beldingi

Belding's Ground Squirrel was collected at three locations. Mr. Stephens collected them on Bishop Creek where they were rather common in the cañons of both branches of the creek. They preferred comparatively level ground. They were extremely abundant at Mammoth/Mammoth Pass from 8,300 feet up to 9,500 feet. At the head of the San Joaquin River, they were collected between 8,100 and 10,000 feet in elevation. Mr. Nelson observed them at Coyote Flat and Mammoth Pass.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	799	Bishop Creek	Aug. 4, 1891	♀	
Nelson	1135	Mammoth	July 23, 1891	♀	
Nelson	1116	Mammoth	July 21, 1891	♂	
Nelson	1117	Mammoth	July 21, 1891	♂	
Nelson	1118	Mammoth	July 21, 1891	♂	
Nelson	1119	Mammoth	July 21, 1891	♀	
Nelson	1121	Mammoth	July 22, 1891	♂	
Nelson	1122	Mammoth	July 22, 1891	♀	
Nelson	1123	Mammoth	July 22, 1891	♀	
Nelson	1131	Mammoth	July 22, 1891	♂	
Nelson	1115	Mammoth	July 21, 1891	♂	
Nelson	1134	Mammoth	July 23, 1891	♂	
Nelson	1136	Mammoth	July 23, 1891	♀	
Stephens	746	Mammoth	July 21, 1891	♀	
Stephens	753	Mammoth	July 22, 1891	♂	
Stephens	754	Mammoth	July 22, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1132	Mammoth	July 22, 1891	♀	
Stephens	772	Pine City	July 25, 1891	♀	
Nelson	1162	San Joaquin River, near head	July 27, 1891	♀	
Nelson	1176	San Joaquin River, near head	July 28, 1891	♀	
Nelson	1187	San Joaquin River, near head	July 31, 1891	♀	
Nelson		Coyote Flat			OSTB July 21 & Aug. 21, 1891
Nelson		Mammoth Pass			OSTB July 21 & Aug. 21, 1891

Citellus variegatus grammurus
Otospermophilus variegatus

Mr. Bailey collected one female Say's Rock Squirrel on May 11 (Bailey catalog # 2761) in the Beaver Dam Mountains in Utah.

Citellus beecheyi beecheyi
Otospermophilus beecheyi beecheyi

The California Ground Squirrel's geographic range tended to be limited to the coastal counties of California. From north to south, they were collected at Monterey, San Luis Obispo, Pozo, the mountains near San Simeon, Sisquoc, Santa Yñez Mission, Gaviota Pass, and near the Ventura River. They were common at Monterey, Pozo, San Simeon, and near the Ventura River.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1644	Gaviota Pass	Dec. 11, 1891	♀	
Nelson	1643	Gaviota Pass	Dec. 11, 1891	♂	
Bailey	3377	Monterey	Oct. 6, 1891	♂	
Bailey	3376	Monterey	Oct. 6, 1891	♂	
Bailey	3375	Monterey	Oct. 6, 1891	♂	
Bailey	3374	Monterey	Oct. 6, 1891	♂	
Bailey	3373	Monterey	Oct. 6, 1891	♂	
Bailey	3353	Monterey	Oct. 1, 1891	♂	
Bailey	3378	Monterey	Oct. 6, 1891	♀	
Nelson	1396	Pozo	Oct. 29, 1891	♂	
Nelson	1399	Pozo	Oct. 29, 1891	♂	
Nelson	1397	Pozo	Oct. 29, 1891	♂	
Nelson	1398	Pozo	Oct. 29, 1891	♂	
Nelson	1432	San Luis Obispo	Nov. 5, 1891	♂	
Nelson	1486	San Simeon, mountains near to	Nov. 16, 1891	♀	
Nelson	1485	San Simeon, mountains near to	Nov. 16, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1601	Santa Yñez Mission	Dec. 5, 1891	♂	
Nelson	1597	Santa Yñez Mission	Dec. 4, 1891	♀	
Nelson	1579	Sisquoc	Dec. 2, 1891	♂	
Nelson	1580	Sisquoc	Dec. 2, 1891	♂	
Nelson	1581	Sisquoc	Dec. 2, 1891	♂	
Nelson	1701	Ventura River, near to	Dec. 22, 1891	♂	
Nelson	1702	Ventura River, near to	Dec. 22, 1891	♂	

Citellus beecheyi fisheri
Otospermophilus beecheyi fisheri

Fisher's Ground Squirrel was collected at many locations as identified in the table below. It was common on the slope west of Walker Pass, at Rose Station, Walker Basin, and on the Middle Fork of the American River. It was abundant from Visalia up to about 3,350 feet through the *Quercus douglassii* zone. Several were seen above the Empire Mine at 9,700 feet sometime between July 26 and August 10 by Mr. Bailey, and at least a few were seen at Fort Tejon.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3450	American River, Middle Fork, 3 miles from Auburn	Oct. 24, 1891	♀	
Palmer	274	Fort Tejon	Jul. 9, 1891	♂	
Palmer	260	Fort Tejon	July 7, 1891	♀	
Palmer	259	Fort Tejon	July 7, 1891	♂	
Palmer	275	Fort Tejon	Jul. 9, 1891	♀	
Fisher	846	Halsted Meadows	Aug. 4, 1891	♀, imm	
Fisher	910	Horse Corral Meadows	Aug. 11, 1891	♀	
Bailey	3243	Kern River Lakes	Sept. 7, 1891	♀	
Fisher	760	Kernville	July 11, 1891	♀	
Bailey	3151	Mineral King	Aug. 3, 1891	♀, imm	
Fisher	756	Pruit's Ranch	July 8, 1891	♂	
Fisher	741	Pruit's Ranch	July 6, 1891	♂, ad	
Fisher	742	Pruit's Ranch	July 6, 1891	♂, imm	
Fisher	752	Pruit's Ranch	July 7, 1891	♂, imm	
Fisher	753	Pruit's Ranch	July 8, 1891	♀, imm	
Bailey	3023	Pruit's Ranch	July 7, 1891	♀, imm	
Bailey	3007	Pruit's Ranch	July 7, 1891	♂	
Bailey	3033	Pruit's Ranch	Jul. 9, 1891	♀, imm	
Nelson	1287	Rose Station	Oct. 13, 1891	♂	
Nelson	1286	Rose Station	Oct. 13, 1891	♀	
Nelson	1361	San Emigdio	Oct. 23, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1240	San Joaquin River	Aug. 15, 1891	♂	
Nelson	1305	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1304	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1303	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Bailey	3244	Trout Meadows	Sept. 7, 1891	♀	
Fisher	773	Walker Basin	July 14, 1891	♂, ad	
Bailey	2979	Walker Pass, west slope	July 3, 1891	♀, imm	
Nelson	1207	Yosemite Valley	Aug. 6, 1891	♀	
Nelson	1215	Yosemite Valley	Aug. 7, 1891	♂	
Bailey		Empire Mine			OSTB July 26 & Aug. 10, 1891
Stephens		Fort Tejon			observed, no date
Stephens		Walker Basin			observed, no date

Citellus beecheyi parvulus
Otospermophilus beecheyi parvulus

The Lesser California Ground Squirrel was collected at many locations as identified in the table below. The taxon was collected by Messrs. Fisher, Nelson, Stephens, and Palmer. It was observed by Mr. Stephens at Ash Creek, and by Mr. Nelson on Mill Creek Cañon in the northern end of the Panamint Valley. At Lone Pine, this squirrel was common and its distribution extended up into the Sierras. The animal was common in the Panamint Mountains in Cottonwood Cañon and the Willow Creek–Jackass Spring area. This is essentially a rock inhabiting species in the mountains. It was common at Moran's, but not common at Coso.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	574	Cartago	June 3, 1891	♀	
Stephens	573	Cartago	June 3, 1891	♀	
Stephens	575	Cartago	June 3, 1891	♀	
Stephens	576	Cartago	June 3, 1891	♀, juv	
Stephens	577	Cartago	June 3, 1891	♂, juv	
Fisher	626	Coso	May 22, 1891	♀, ad	
Fisher	629	Coso	May 22, 1891	♂, imm	
Fisher	618	Coso	May 21, 1891	♀, ad	
Palmer	167	Coso	May 24, 1891	♂, imm	
Palmer	162	Coso	May 22, 1891	♂, imm	
Palmer	144	Coso	May 18, 1891	♂, imm	
Nelson	905	Cottonwood Cañon, Panamint Mountains	May 24, 1891	♀	
Nelson	979	Cottonwood Cañon, Panamint Mountains	June 14, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	639	Independence Creek	June 21, 1891	♂, juv	
Palmer	186	Lone Pine	June 9, 1891	♂, imm	
Nelson	130	Lone Pine	Dec. 21, 1890	♂	
Fisher	583	Maturango Spring	May 13, 1891	♀	
Fisher	574	Maturango Spring	May 8, 1891	♂	
Stephens	691	Moran's	July 6, 1891	♀	
Stephens	692	Moran's	July 6, 1891	♀	
Stephens	602	Olancha, 5 miles southwest of	June 7, 1891	♂	
Stephens	882	Riverside	Sept. 20, 1891	♂	
Fisher	569	Shepherd Cañon	Apr. 30, 1891	♀, ad	
Nelson	857	Willow Creek, Panamint Mountains, head of	May 12, 1891	♀	
Nelson	843	Willow Creek, Panamint Mountains, head of	May 9, 1891	♀	
Nelson	842	Willow Creek, Panamint Mountains, head of	May 9, 1891	♂	
Stephens		Ash Creek			OSTB May 16 & 23, 1891
Nelson		Mill Creek Cañon, Panamint Valley			OSTB May 4 & June 15, 1891

Citellus beecheyi sierrae
Otospermophilus beecheyi sierrae

The Sierra Ground Squirrel's range was much smaller than that of *Citellus beecheyi beecheyi*, and it was only collected at the head of the Merced River and at Wawona. Its upper limit on the Merced was ~ 8,500 feet and its presence extended down to the valley plains where it could be present in great numbers.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1203	Merced River, near head	Aug. 4, 1891	♀	
Nelson	1198	Merced River, near head	Aug. 3, 1891	♀	
Nelson	1197	Merced River, near head	Aug. 3, 1891	♂	
Nelson	1230	Wawona	Aug. 11, 1891	♂	

Citellus leucurus leucurus
Ammospermophilus leucurus leucurus (173), *A. leucurus escalante* (2)

The White-tailed Antelope Squirrel was omnipresent across a large portion of the area where Death Valley Expedition biologists worked. A total of 175 specimens of this taxon were collected. For the sake of brevity, a table identifying those collections is not provided. Instead, the collection locations are identified and the number of collections at each locality is quantified in parentheses.

In Utah, they were found at Saint George (2).

In Nevada, they were collected at or near Ash Meadows (18), at Cave Camp (1), the east slope of the Charleston Mountains (2), Cottonwood Springs in the Las Vegas Valley (2), Las Vegas Ranch (3), southern end of Oasis Valley (6), in the Pahranagat Mountains (1), at Pahroc Spring (1), in Pahrump Valley (9), Reese River near the Lander–Nye County line (1), at Thorpe Mill (2), and in the Timpahute Mountains (1).

In California, they were collected at the Alabama Hills (4), Alvord (1), Ash Creek (3), Benton (1), Bishop (2), Borax Flat Borax Works (3), the charcoal kilns (1) and Cottonwood Cañon (2) in the Panamint Mountains, at Coso (12) and the Coso Mountains (1), Daggett (1), Deep Spring Valley (1), Emigrant Spring (1), Granite Springs (2), Grapevine Mountains (1), near Hesperia (1), Hot Springs in Panamint Valley (4), Hunter Mountain (1), Indian Joe Cañon (1), Johnson Cañon (17), Keeler (1), Little Lake (1), Lone Pine (3), Lone Willow Spring (9), Maturango Spring (1), Mesquite Spring in the Funeral Mountains (1), Moran's ranch (3), near Olancha (2), at the mining town of Panamint (4), in Panamint Valley (2), Resting Springs (16), Salt Wells Valley (2), San Gorgonio Pass (4), Shepherd Cañon (3), the Sierra Nevada near Lone Pine (2), Surprise Cañon (8), Twelve Mile Spring (1), at and near Walker Pass (2), and at Willow Creek in the Panamint Mountains (1).

Citellus nelsoni
Ammospermophilus nelsoni

All of the specimens of the San Joaquin Antelope Squirrel were collected by Mr. Nelson while he was in the San Joaquin Valley in October. These animals were collected 10 miles south of Adobe Station, at Alila, the south end of Buena Vista Lake, Lerdo, Poso, and in the Temploa Mountains. One of these squirrels was observed near Tipton by Mr. Nelson in October.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1285	Adobe Station, 10 miles south of	Oct. 13, 1891	♂	
Nelson	1260	Alila	Oct. 9, 1891	♀	
Nelson	1259	Alila	Oct. 8, 1891	♂	
Nelson	1382	Buena Vista Lake, south end	Oct. 25, 1891	♀	
Nelson	1381	Buena Vista Lake, south end	Oct. 25, 1891	♀	
Nelson	1380	Buena Vista Lake, south end	Oct. 25, 1891	♂	
Nelson	1276	Lerdo	Oct. 11, 1891	♂	
Nelson	1275	Lerdo	Oct. 11, 1891	♂	
Nelson	1271	Poso	Oct. 10, 1891	♀	
Nelson	1270	Poso	Oct. 10, 1891	♀	
Nelson	1269	Poso	Oct. 10, 1891	♀	
Nelson	1384	Temploa Mountains	Oct. 26, 1891	♀	
Nelson	1383	Temploa Mountains	Oct. 26, 1891	♀	
Nelson		Tipton			OSTB Oct. 5 & 27, 1891

Citellus mohavensis
Xerospermophilus mohavensis

The Mohave Ground Squirrel's distribution is limited to the Mohave Desert. This animal was only collected by Mr. Stephens, and all but one of his collections occurred in Salt Wells Valley, sometimes known as Indian Wells Valley. He also collected one of these animals at Haiwee Meadows just north of that valley.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	442	Haiwee Meadows	May 13, 1891	♀	
Stephens	376	Raymond Well	May 2, 1891	♀	
Stephens	396	Salt Wells Valley, between Raymond Well and Indian Well	May 4, 1891	♂	
Stephens	391	Salt Wells Valley, between Raymond Well and Indian Well	May 3, 1891	♀	
Stephens	390	Salt Wells Valley, between Raymond Well and Indian Well	May 3, 1891	♂	
Stephens	389	Salt Wells Valley, between Raymond Well and Indian Well	May 3, 1891	♂	
Stephens	388	Salt Wells Valley, between Raymond Well and Indian Well	May 3, 1891	♂	
Stephens	387	Salt Wells Valley, between Raymond Well and Indian Well	May 3, 1891	♀	

Citellus tereticaudus chlorus
Xerospermophilus tereticaudus chlorus

On September 27, Mr. Stephens collected two male and one female Palm Springs Ground Squirrels at Palm Springs. They were rather common about Palm Spring and less so elsewhere.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	930	Palm Springs	Sept. 27, 1891	♂	
Stephens	929	Palm Springs	Sept. 27, 1891	♂	
Stephens	928	Palm Springs	Sept. 27, 1891	♀	

Citellus tereticaudus tereticaudus
Xerospermophilus tereticaudus tereticaudus

In Utah, one Round-tailed Ground Squirrel was collected along the Virgin River seven miles upstream from Bunkerville.

In Nevada, three of these animals were collected in Ash Meadows, and one was taken and several seen in the Pahrump Valley. Mr. Nelson observed one in the Las Vegas Wash sometime between March 7 and 16.

In California, a large series of this taxon was collected in Death Valley at Bennett Wells and Furnace Creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	436	Ash Meadows	Mar. 20, 1891	♂	
Fisher	419	Ash Meadows	Mar. 17, 1891	♂	
Fisher	328	Ash Meadows	Mar. 4, 1891	♀	
Bailey	2640	Bennett Wells	Apr. 7, 1891	♀	
Nelson	348	Bennett Wells	Jan. 26, 1891	♂	
Nelson	349	Bennett Wells	Jan. 26, 1891	♂	
Nelson	356	Bennett Wells	Jan. 28, 1891	♂	
Bailey	2421	Bennett Wells	Jan. 23, 1891	♂	
Bailey	2422	Bennett Wells	Jan. 23, 1891	♂	
Bailey	2630	Bennett Wells	Apr. 4, 1891	♀	
Bailey	2634	Bennett Wells	Apr. 6, 1891	♀	
Nelson	321	Bennett Wells	Jan. 22, 1891	♂	
Bailey	2639	Bennett Wells	Apr. 7, 1891	♀	
Nelson	682	Furnace Creek	Mar. 22, 1891	♀	
Fisher	121	Furnace Creek	Feb. 2, 1891	♂	
Fisher	116	Furnace Creek	Feb. 1, 1891	♂	
Fisher	115	Furnace Creek	Jan. 31, 1891	♂	
Nelson	673	Furnace Creek	Mar. 20, 1891	♂	
Nelson	679	Furnace Creek	Mar. 22, 1891	♀	
Bailey	2645	Furnace Creek	Apr. 11, 1891	♂	
Nelson	681	Furnace Creek	Mar. 22, 1891	♀	
Fisher	114	Furnace Creek	Jan. 31, 1891	♂	
Fisher	113	Furnace Creek	Jan. 31, 1891	♂	
Fisher	97	Furnace Creek	Jan. 28, 1891	♂, ad	
Fisher	77	Furnace Creek	Jan. 26, 1891	♂, ad	
Bailey	2954	Furnace Creek	June 19, 1891	♂	
Bailey	2953	Furnace Creek	June 19, 1891	♀	
Palmer	29	Furnace Creek	Jan. 26, 1891	♂	
Nelson	680	Furnace Creek	Mar. 22, 1891	♀	
Nelson	591	Pahrump Valley	Mar. 4, 1891	♂	
Bailey	2755	Virgin River, 7 miles above Bunkerville	May 9, 1891	♂, ad	
Nelson		Las Vegas Wash			OSTB March 7 & 16, 1891

Citellus lateralis chrysodeirus
Callospermophilus lateralis chrysodeirus

The Golden-mantled Ground Squirrel was captured at a large number of high elevation localities as identified in the table below.

A large series of *Citellus lateralis chrysodeirus* was collected by Mr. Dutcher at Big Cottonwood Meadows. Several other specimens were collected at Big Whitney Meadows, Bishop Creek, Fish Camp, Halsted Meadows, Horse Corral Meadows, the East Fork of the Kaweah River in the vicinity of Mineral King, Mammoth, near the head of the Merced and San Joaquin rivers, Mulkey Meadows, and Summit Meadow. The two specimens collected by Mr. Stephens on Bishop Creek were at the lowest elevation where the taxon was collected.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	99	Big Cottonwood Meadows	July 17, 1891	♂	
Dutcher	4	Big Cottonwood Meadows	June 17, 1891	♂	
Dutcher	8	Big Cottonwood Meadows	June 23, 1891	♀	
Dutcher	9	Big Cottonwood Meadows	June 23, 1891	♀	
Dutcher	94	Big Cottonwood Meadows	July 16, 1891	♀	
Dutcher	100	Big Cottonwood Meadows	July 17, 1891	♀	
Dutcher	101	Big Cottonwood Meadows	July 17, 1891	♀	
Dutcher	107	Big Cottonwood Meadows	July 18, 1891	♂	
Dutcher	112	Big Cottonwood Meadows	July 20, 1891	♂	
Dutcher	113	Big Cottonwood Meadows	July 20, 1891	♀	
Dutcher	116	Big Cottonwood Meadows	July 20, 1891	♂	
Dutcher	152	Big Cottonwood Meadows	Aug. 2, 1891	♂, juv	
Dutcher	153	Big Cottonwood Meadows	Aug. 2, 1891	♀	
Dutcher	160	Big Cottonwood Meadows	Aug. 5, 1891	♂	
Dutcher	179	Big Cottonwood Meadows	Aug. 8, 1891	♀, juv	
Dutcher	182	Big Cottonwood Meadows	Aug. 8, 1891	♂	
Dutcher	194	Big Cottonwood Meadows	Aug. 13, 1891	♂	
Dutcher	195	Big Cottonwood Meadows	Aug. 13, 1891	♀	
Dutcher	197	Big Cottonwood Meadows	Aug. 16, 1891	♀	
Dutcher	76	Big Cottonwood Meadows	July 12, 1891	♀	
Dutcher	171	Big Cottonwood Meadows	Aug. 7, 1891	♂	
Fisher	937	Big Whitney Meadows	Aug. 30, 1891	♀, ad	
Bailey	3212	Big Whitney Meadows	Aug. 20, 1891	♂	
Fisher	944	Big Whitney Meadows	Sept. 1, 1891	♂	
Bailey	3213	Big Whitney Meadows	Aug. 20, 1891	♂, imm	
Stephens	800	Bishop Creek	Aug. 4, 1891	♂	
Stephens	807	Bishop Creek	Aug. 8, 1891		
Nelson	1234	Fish Camp	Aug. 13, 1891	♂	
Fisher	844	Halsted Meadows	Aug. 4, 1891	♂, imm	
Fisher	865	Halsted Meadows	Aug. 5, 1891	♂, ad	
Fisher	843	Halsted Meadows	Aug. 4, 1891	♀, ad	
Fisher	915	Horse Corral Meadows	Aug. 12, 1891	♀, imm	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	909	Horse Corral Meadows	Aug. 11, 1891	♀, imm	
Fisher	914	Horse Corral Meadows	Aug. 12, 1891	♀, ad	
Palmer	317	Horse Corral Meadows	Aug. 11, 1891	♀	
Bailey	3192	Kaweah River, East Fork, Mineral King	Aug. 8, 1891	♀	
Bailey	3177	Kaweah River, East Fork, Mineral King	Aug. 5, 1891	♂	
Bailey	3187	Kaweah River, East Fork, Mineral King	Aug. 7, 1891	♀	
Bailey	3191	Kaweah River, East Fork, Mineral King	Aug. 8, 1891	♀	
Nelson	1141	Mammoth	July 23, 1891	♂	
Nelson	1188	Merced River, near head	July 31, 1891	♀	
Bailey	3164	Mineral King	Aug. 4, 1891	♀, ad	
Bailey	3152	Mineral King	Aug. 3, 1891	♂	
Bailey	3153	Mineral King	Aug. 3, 1891	♂	
Stephens	859	Mulkey Meadows	Aug. 27, 1891	♂	
Stephens	854	Mulkey Meadows	Aug. 26, 1891	♂	
Stephens	855	Mulkey Meadows	Aug. 26, 1891	♂	
Stephens	853	Mulkey Meadows	Aug. 26, 1891	♂	
Stephens	861	Mulkey Meadows	Aug. 27, 1891	♂	
Nelson	1178	San Joaquin River, near head	July 29, 1891	♀	
Stephens	531	Summit Meadow	May 27, 1891	♀	

Citellus lateralis trepidus
Callospermophilus lateralis trepidus

The Nevada Mantled Ground Squirrel occurred at locations east of those occupied by the Golden-mantled Ground Squirrel. The former taxon was collected in Black Cañon and near the summit of the White Mountains, in the Inyo Mountains near Lone Pine and at Waucoba Mountain, and at the Indian Queen Mill and Mine.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1063	Black Cañon	July 7, 1891	♀	
Nelson	1054	Black Cañon	July 7, 1891	♂	
Nelson	1055	Black Cañon	July 7, 1891	♀	
Nelson	1056	Black Cañon	July 7, 1891	♀	
Nelson	1062	Black Cañon	July 7, 1891	♀	
Nelson	1064	Black Cañon	July 7, 1891	♀	
Nelson	1065	Black Cañon	July 7, 1891	♀	
Nelson	1061	Black Cañon	July 7, 1891	♂	
Stephens	722	Indian Queen Mill	July 13, 1891	♀	
Stephens	732	Indian Queen Mine	July 15, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1004	Inyo Mountains, near Lone Pine	June 26, 1891	♀	
Nelson	1016	Inyo Mountains, near Lone Pine	June 27, 1891	♂	
Nelson	1039	Inyo Mountains, Waucoba Mountain	July 2, 1891	♂	
Nelson	1022	Inyo Mountains, Waucoba Mountain	July 1, 1891	♀	
Nelson	1077	White Mountains, summit	July 8, 1891	♀	
Nelson	1078	White Mountains, summit	July 8, 1891	♀	
Nelson	1082	White Mountains, summit	July 8, 1891	♀	

Eutamias sp.
Tamias sp.

The Sierra Nevada mountain range has a diverse chipmunk fauna and the Death Valley Expedition biologists commonly caught more than one taxon at a particular location. The biologist's special reports oftentimes provide insightful ecological descriptions about the chipmunks at a given site, but many of those descriptions are not clearly or explicitly aligned with a specific taxon. That trait therefore limits the ability to provide that contextual text in some of the taxon summaries below. Readers who are interested in gaining deeper insight into the ecology of chipmunks in the Sierra should therefore review the special reports pertaining to collecting activities there (e.g., Nelson's 1891-27 special report) and draw their own conclusions about which special report habitat descriptions, etc. align with a specific taxon.

Eutamias alpinus
Tamias alpinus

The Alpine Chipmunk was common and frequently captured at Big Cottonwood Meadows by Mr. Dutcher and at Mineral King by Messrs. Bailey and Fisher. It was also captured at Big Whitney Meadows; Independence Creek and Onion Valley; along the Kaweah, Kings, and Merced rivers; and on Olancha Peak.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	34	Big Cottonwood Meadows	July 6, 1891	♂	
Dutcher	95	Big Cottonwood Meadows	July 16, 1891	♀	
Dutcher	59	Big Cottonwood Meadows	July 8, 1891	♂	
Dutcher	56	Big Cottonwood Meadows	July 7, 1891	♀	
Dutcher	55	Big Cottonwood Meadows	July 7, 1891	♀	
Dutcher	47	Big Cottonwood Meadows	July 7, 1891	♂	
Dutcher	45	Big Cottonwood Meadows	July 7, 1891	♀, juv	
Dutcher	96	Big Cottonwood Meadows	July 16, 1891	♀	
Dutcher	36	Big Cottonwood Meadows	July 6, 1891	♀	
Dutcher	15	Big Cottonwood Meadows	June 30, 1891	♂	
Dutcher	14	Big Cottonwood Meadows	June 30, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	3	Big Cottonwood Meadows	June 17, 1891	♀	
Fisher	924	Big Cottonwood Meadows	Aug. 26, 1891	♀	
Fisher	923	Big Cottonwood Meadows	Aug. 26, 1891	♂	
Fisher	922	Big Cottonwood Meadows	Aug. 25, 1891	♂	
Fisher	921	Big Cottonwood Meadows	Aug. 25, 1891	♂	
Fisher	920	Big Cottonwood Meadows	Aug. 25, 1891	♂	
Dutcher	44	Big Cottonwood Meadows	July 7, 1891	♀	
Dutcher	189	Big Cottonwood Meadows	Aug. 12, 1891	♂	
Dutcher	102	Big Cottonwood Meadows	July 17, 1891	♂	
Dutcher	6	Big Cottonwood Meadows	June 19, 1891	♂	
Dutcher	190	Big Cottonwood Meadows	Aug. 12, 1891	♀	
Dutcher	181	Big Cottonwood Meadows	Aug. 8, 1891	♂	
Dutcher	174	Big Cottonwood Meadows	Aug. 7, 1891	♂	
Dutcher	173	Big Cottonwood Meadows	Aug. 7, 1891	♂	
Dutcher	158	Big Cottonwood Meadows	Aug. 5, 1891	♂	
Dutcher	120	Big Cottonwood Meadows	July 21, 1891	♀	
Dutcher	114	Big Cottonwood Meadows	July 20, 1891		
Dutcher	191	Big Cottonwood Meadows	Aug. 12, 1891	♀	
Bailey	3226	Big Whitney Meadows	Aug. 21, 1891	♂	
Bailey	3227	Big Whitney Meadows	Aug. 21, 1891	♂	
Fisher	943	Big Whitney Meadows	Sept. 1, 1891	♂	
Nelson	1250	Independence Creek	Aug. 21, 1891	♀	
Bailey	3184	Kaweah River, East Fork, Mineral King	Aug. 6, 1891	♂	
Bailey	3196	Kaweah River, East Fork, Mineral King	Aug. 10, 1891	♂	
Bailey	3188	Kaweah River, East Fork, Mineral King	Aug. 7, 1891	♀	
Nelson	1248	Kings River	Aug. 21, 1891	♀	
Nelson	1249	Kings River	Aug. 21, 1891	♀	
Nelson	1189	Merced River, near head	July 31, 1891	♂	
Bailey	3163	Mineral King	Aug. 4, 1891	♂	
Bailey	3162	Mineral King	Aug. 4, 1891	♂	
Bailey	3161	Mineral King	Aug. 4, 1891	♂	
Bailey	3159	Mineral King	Aug. 4, 1891	♀, ad	
Fisher	954	Mineral King	Sept. 9, 1891	♀	
Bailey	3158	Mineral King	Aug. 3, 1891	♀	
Bailey	3157	Mineral King	Aug. 3, 1891	♀	
Bailey	3156	Mineral King	Aug. 3, 1891	♂	
Bailey	3155	Mineral King	Aug. 3, 1891	♂	
Bailey	3160	Mineral King	Aug. 4, 1891	♀, ad	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	953	Mineral King	Sept. 9, 1891	♂	
Bailey	3154	Mineral King	Aug. 3, 1891	♂	
Stephens	839	Olancha Peak	Aug. 23, 1891	♀	
Stephens	840	Olancha Peak	Aug. 23, 1891	♂	
Stephens	528	Olancha Peak	May 25, 1891	♀	
Stephens	527	Olancha Peak	May 25, 1891	♀	
Stephens	526	Olancha Peak	May 25, 1891	♂	
Stephens	841	Olancha Peak	Aug. 23, 1891	♀	
Stephens	642	Onion Valley	June 22, 1891	♀	
Stephens	643	Onion Valley	June 22, 1891	♂	

Eutamias amoenus monoensis
Tamias amoenus monoensis

The Mono Chipmunk was collected at Mammoth and Pine City in late July by Messrs. Stephens and Nelson.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	757	Mammoth	July 22, 1891	♂	
Stephens	756	Mammoth	July 22, 1891	♀	
Stephens	751	Mammoth	July 22, 1891	♀	
Stephens	750	Mammoth	July 22, 1891	♀	
Nelson	1140	Mammoth	July 23, 1891	♂	
Stephens	775	Pine City	July 26, 1891	♂	

Eutamias minimus pictus
Tamias minimus scrutator

In Nevada, the Great Basin Chipmunk was collected 5 miles south of Austin, on Cloverdale Creek where piñons and cedars were present, at Indian Queen where it was abundant in the sagebrush at the edge of the valley to timberline, on Mount Magruder, along the Reese River at the Lander–Nye County line where a few were present, and at Silver Creek.

In California, it was captured at Benton, Bishop Creek, in the Black Cañon in the White Mountains and on the summit ridge of that range, at the Deep Spring–Owens Valley Pass, in the Inyo Mountains near Lone Pine and on Waucoba Mountain where it was abundant, at Monache Meadows where it was common, and on Olancha Peak.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2122	Austin, 5 miles south of	Nov. 13, 1890	♀	
Bailey	2104	Austin, 5 miles south of	Nov. 11, 1890	♂	
Bailey	2105	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2106	Austin, 5 miles south of	Nov. 11, 1890	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2107	Austin, 5 miles south of	Nov. 11, 1890	♀	
Bailey	2115	Austin, 5 miles south of	Nov. 12, 1890	♀	
Bailey	2116	Austin, 5 miles south of	Nov. 12, 1890	♀	
Bailey	2117	Austin, 5 miles south of	Nov. 12, 1890	♀	
Bailey	2118	Austin, 5 miles south of	Nov. 12, 1890	♀	
Bailey	2119	Austin, 5 miles south of	Nov. 12, 1890	♂	
Stephens	700	Benton	Jul. 9, 1891	♂	
Stephens	699	Benton	Jul. 9, 1891	♂	
Stephens	817	Bishop Creek	Aug. 9, 1891	♂	
Nelson	1058	Black Cañon	July 7, 1891	♀	
Nelson	1057	Black Cañon	July 7, 1891	♂	
Nelson	1066	Black Cañon	July 7, 1891	♀	
Bailey	2216	Cloverdale Creek, 3 miles below the divide	Nov. 28, 1890	♂	
Bailey	2933	Deep Springs—Owens Valley Pass	June 9, 1891	♀, ad	
Bailey	2934	Deep Springs—Owens Valley Pass	June 9, 1891	♀, juv	
Bailey	2935	Deep Springs—Owens Valley Pass	June 9, 1891	♀, juv	
Bailey	2936	Deep Springs—Owens Valley Pass	June 9, 1891	♂, juv	
Stephens	713	Indian Queen	July 11, 1891	♀	
Nelson	997	Inyo Mountains, near Lone Pine	June 26, 1891	♂	
Nelson	993	Inyo Mountains, near Lone Pine	June 25, 1891	♂	
Nelson	987	Inyo Mountains, near Lone Pine	June 25, 1891	♀	
Nelson	1038	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Nelson	1044	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Nelson	1037	Inyo Mountains, Waucoba Mountain	July 2, 1891	♀	
Nelson	1035	Inyo Mountains, Waucoba Mountain	July 2, 1891	♂	
Stephens	518	Monache Meadows	May 24, 1891	♀	
Stephens	520	Monache Meadows	May 24, 1891	♀	
Bailey	2927	Mount Magruder	June 7, 1891	♀, juv	
Bailey	2928	Mount Magruder	June 7, 1891	♀	
Bailey	2926	Mount Magruder	June 7, 1891	♂, juv	
Bailey	2910	Mount Magruder	June 6, 1891	♀, imm	
Bailey	2888	Mount Magruder	June 5, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2887	Mount Magruder	June 4, 1891	♂	
Stephens	842	Olancha Peak	Aug. 23, 1891	♂	
Bailey	2129	Reese River, Lander–Nye County line	Nov. 16, 1890	♀	
Bailey	2165	Reese River, Lander–Nye County line	Nov. 20, 1890	♀	
Bailey	2164	Reese River, Lander–Nye County line	Nov. 20, 1890	♂	
Bailey	2146	Reese River, Lander–Nye County line	Nov. 19, 1890	♂	
Bailey	2145	Reese River, Lander–Nye County line	Nov. 19, 1890	♀	
Bailey	2128	Reese River, Lander–Nye County line	Nov. 16, 1890	♀	
Bailey	2080	Silver Creek	Nov. 7, 1890	♀	
Bailey	2089	Silver Creek	Nov. 8, 1890	♂	
Nelson	1075	White Mountains, summit	July 8, 1891	♀	
Nelson	1076	White Mountains, summit	July 8, 1891	♀	
Nelson	1074	White Mountains, summit	July 8, 1891	♀	

Eutamias panamintinus
Tamias panamintinus panamintinus

The Panamint Chipmunk was collected at four locations in Nevada: Indian Queen and Indian Queen Mill, Mount Magruder, and Wood Cañon in the Grapevine Mountains.

In California, it was collected at Benton, Bishop Creek, Black Cañon in the White Mountain, the charcoal kilns near Wildrose Cañon, Coso Peak where they were common in the piñon belt, Cottonwood Cañon and the northwest base of Telescope Peak in the Panamint Range, at two locations in Surprise Cañon, the Inyo Mountains near Lone Pine and at Waucoba Mountain, Johnson Cañon, Maturango Spring in the Argus Mountains, Lone Pine, five miles southwest of Olancha, and the head of Willow Creek in the Panamint Mountains. Mr. Nelson and Fisher captured 27 of these animals in Johnson Cañon between March 29 and April 8 where they were common but exceedingly wary; for the sake of brevity, only one of those animals is included in the table below.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	702	Benton	Jul. 9, 1891	♂	
Stephens	701	Benton	Jul. 9, 1891	♀	
Stephens	816	Bishop Creek	Aug. 9, 1891	♀	
Nelson	1071	Black Cañon	July 7, 1891	♀	
Nelson	1060	Black Cañon	July 7, 1891	♀	
Nelson	1059	Black Cañon	July 7, 1891	♀	
Fisher	697	Charcoal Kilns	June 24, 1891	♀	
Fisher	698	Charcoal Kilns	June 24, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	699	Charcoal Kilns	June 24, 1891	♂, imm	
Fisher	700	Charcoal Kilns	June 24, 1891	♂, imm	
Stephens	301	Charcoal Kilns	Apr. 18, 1891	♂	
Fisher	695	Charcoal Kilns	June 24, 1891	♀, ad	
Fisher	696	Charcoal Kilns	June 24, 1891	♀, ad	
Fisher	693	Charcoal Kilns	June 24, 1891	♀, ad	
Fisher	692	Charcoal Kilns	June 25, 1891	♀, ad	
Fisher	691	Charcoal Kilns	June 25, 1891	♀, ad	
Fisher	694	Charcoal Kilns	June 24, 1891	♀, ad	
Fisher	638	Coso Peak	May 23, 1891	♀	
Fisher	656	Coso Peak	May 27, 1891	♀	
Fisher	637	Coso Peak	May 23, 1891	♂	
Fisher	636	Coso Peak	May 23, 1891	♂	
Nelson	980	Cottonwood Cañon, Panamint Mountains	June 14, 1891	♂	
Nelson	981	Cottonwood Cañon, Panamint Mountains	June 14, 1891	♀	
Nelson	982	Cottonwood Cañon, Panamint Mountains	June 14, 1891	♀	
Nelson	983	Cottonwood Cañon, Panamint Mountains	June 14, 1891	♀	
Fisher	564	Decker's Camp	Apr. 20, 1891	♂	
Fisher	559	Decker's Camp	Apr. 19, 1891	♂	
Fisher	560	Decker's Camp	Apr. 19, 1891	♂	
Fisher	561	Decker's Camp	Apr. 19, 1891	♂	
Fisher	562	Decker's Camp	Apr. 19, 1891	♀	
Fisher	563	Decker's Camp	Apr. 19, 1891	♀	
Stephens	714	Indian Queen	July 11, 1891	♀	
Stephens	721	Indian Queen Mill	July 13, 1891	♂	
Nelson	1019	Inyo Mountains, near Lone Pine	June 27, 1891	♂	
Nelson	1017	Inyo Mountains, near Lone Pine	June 27, 1891	♀	
Nelson	1011	Inyo Mountains, near Lone Pine	June 27, 1891	♀	
Nelson	1018	Inyo Mountains, near Lone Pine	June 27, 1891	♀	
Nelson	1026	Inyo Mountains, Waucoba Mountain	July 1, 1891	♀	
Fisher	465	Johnson Cañon	Mar. 29, 1891	♂	
Palmer	188	Lone Pine	June 10, 1891	♂, imm	
Palmer	137	Maturango Spring	May 7, 1891	♂	
Palmer	136	Maturango Spring	May 7, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	138	Maturango Spring	May 9, 1891	♂	
Fisher	577	Maturango Spring	May 9, 1891	♀	
Fisher	578	Maturango Spring	May 9, 1891	♂	
Palmer	141	Maturango Spring	May 13, 1891	♀	
Palmer	140	Maturango Spring	May 13, 1891	♀	
Palmer	143	Maturango Spring	May 13, 1891	♀	
Fisher	579	Maturango Spring	May 9, 1891	♀	
Fisher	575	Maturango Spring	May 9, 1891	♂	
Fisher	573	Maturango Spring	May 8, 1891	♂	
Fisher	572	Maturango Spring	May 6, 1891	♀	
Fisher	571	Maturango Spring	May 6, 1891	♂	
Fisher	570	Maturango Spring	May 6, 1891	♂	
Fisher	576	Maturango Spring	May 9, 1891	♀	
Palmer	142	Maturango Spring	May 13, 1891	♀	
Bailey	2886	Mount Magruder	June 4, 1891	♀	
Stephens	595	Olancha, 5 miles southwest of	June 6, 1891	♂	
Nelson	804	Surprise Cañon	Apr. 19, 1891	♀	
Nelson	774	Surprise Cañon	Apr. 14, 1891	♂	
Nelson	785	Surprise Cañon	Apr. 15, 1891	♂	
Nelson	786	Surprise Cañon	Apr. 15, 1891	♀	
Nelson	798	Surprise Cañon	Apr. 16, 1891	♂	
Nelson	803	Surprise Cañon	Apr. 19, 1891	♂	
Nelson	802	Surprise Cañon	Apr. 19, 1891	♂	
Bailey	2685	Telescope Peak, northwest base	Apr. 16, 1891	♀	
Bailey	2693	Telescope Peak, northwest base	Apr. 18, 1891	♂	
Bailey	2694	Telescope Peak, northwest base	Apr. 18, 1891	♀	
Nelson	814	Willow Creek, Panamint Mountains, head of	May 6, 1891	♀	
Nelson	824	Willow Creek, Panamint Mountains, head of	May 7, 1891	♀	
Nelson	825	Willow Creek, Panamint Mountains, head of	May 8, 1891	♂	
Nelson	826	Willow Creek, Panamint Mountains, head of	May 8, 1891	♀	
Nelson	839	Willow Creek, Panamint Mountains, head of	May 9, 1891	♂	
Nelson	867	Willow Creek, Panamint Mountains, head of	May 16, 1891	♀	
Nelson	959	Wood Cañon	June 8, 1891	♀	
Nelson	960	Wood Cañon	June 8, 1891	♂	
Nelson	961	Wood Cañon	June 8, 1891	♀	
Nelson	954	Wood Cañon	June 7, 1891	♀	

Eutamias quadrivittatus frater
Tamias speciosus frater

The Tahoe Chipmunk was collected at Fish Camp, Mammoth, near the head of the Merced and San Joaquin rivers, and at Wawona.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1238	Fish Camp	Aug. 13, 1891	♀	
Nelson	1113	Mammoth	July 21, 1891	♂	
Nelson	1138	Mammoth	July 23, 1891	♂	
Stephens	762	Mammoth	July 23, 1891	♀	
Stephens	760	Mammoth	July 22, 1891	♂	
Nelson	1139	Mammoth	July 23, 1891	♀	
Nelson	1112	Mammoth	July 21, 1891	♂	
Nelson	1200	Merced River, near head	Aug. 4, 1891	♂	
Nelson	1194	Merced River, near head	Aug. 2, 1891	♀	
Nelson	1179	San Joaquin River, near head	July 29, 1891	♂	
Nelson	1159	San Joaquin River, near head	July 27, 1891	♂	
Nelson	1160	San Joaquin River, near head	July 27, 1891	♂	
Nelson	1163	San Joaquin River, near head	July 27, 1891	♀	
Nelson	1165	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1166	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1167	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1175	San Joaquin River, near head	July 28, 1891	♀	
Stephens	780	San Joaquin River, near head	July 27, 1891	♂	
Nelson	1182	San Joaquin River, near head	July 30, 1891	♂	
Stephens	778	San Joaquin River, near head	July 27, 1891	♂	
Stephens	779	San Joaquin River, near head	July 27, 1891	♂	
Nelson	1168	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1226	Wawona	Aug. 9, 1891	♀	

Eutamias quadrivittatus inyoensis
Tamias umbrinus inyoensis

The Inyo Chipmunk was collected in Nevada at the Indian Queen Mine where they were rather common.

In California, it was collected at Big Cottonwood Meadows, Bishop Creek, in the White Mountains at Black Cañon and along the summit ridge, in the Inyo Mountains near Lone Pine and on Waucoba Mountain, and in Onion Valley along Independence Creek.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	180	Big Cottonwood Meadows	Aug. 8, 1891	♀	
Dutcher	103	Big Cottonwood Meadows	July 17, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	87	Big Cottonwood Meadows	July 14, 1891	♀	
Dutcher	86	Big Cottonwood Meadows	July 14, 1891	♂	
Dutcher	60	Big Cottonwood Meadows	Jul. 9, 1891	♀	
Stephens	808	Bishop Creek	Aug. 8, 1891	♀	
Nelson	1070	Black Cañon	July 7, 1891	♀	
Nelson	1068	Black Cañon	July 7, 1891	♂	
Nelson	1069	Black Cañon	July 7, 1891	♂	
Stephens	723	Indian Queen Mine	July 13, 1891	♂	
Stephens	724	Indian Queen Mine	July 13, 1891	♀	
Nelson	995	Inyo Mountains, near Lone Pine	June 25, 1891	♀	
Nelson	1001	Inyo Mountains, near Lone Pine	June 26, 1891	♂	
Nelson	1002	Inyo Mountains, near Lone Pine	June 26, 1891	♀	
Nelson	994	Inyo Mountains, near Lone Pine	June 25, 1891	♀	
Nelson	1003	Inyo Mountains, near Lone Pine	June 26, 1891	♀	
Nelson	1013	Inyo Mountains, near Lone Pine	June 27, 1891	♀	
Nelson	1028	Inyo Mountains, Waucoba Mountain	July 1, 1891	♂	
Nelson	1024	Inyo Mountains, Waucoba Mountain	July 1, 1891	♂	
Nelson	1027	Inyo Mountains, Waucoba Mountain	July 1, 1891	♂	
Nelson	1025	Inyo Mountains, Waucoba Mountain	July 1, 1891	♀	
Stephens	641	Onion Valley	June 22, 1891	♀	
Nelson	1083	White Mountains, summit	July 8, 1891	♂	
Nelson	1097	White Mountains, summit	July 12, 1891	♀	
Nelson	1084	White Mountains, summit	July 8, 1891	♀	
Nelson	1091	White Mountains, summit	July 10, 1891	♀	

Eutamias quadrivittatus sequoiensis
Tamias speciosus sequoiensis

True to its name, the Sequoia Chipmunk was collected at several locations around Sequoia National Park as identified in the table below. For the sake of brevity, the tabular summary below only includes three of the 14 specimens collected by Mr. Dutcher at Big Cottonwood Meadows between June 17 and August 7, and three of the 20 specimens collected by Messrs. Fisher and Palmer at Halstead Meadows on August 4 and 5.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	16	Big Cottonwood Meadows	July 1, 1891	♂	
Dutcher	1	Big Cottonwood Meadows	June 17, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	5	Big Cottonwood Meadows	June 19, 1891	♀	
Fisher	848	Halsted Meadows	Aug. 4, 1891	♀	
Palmer	294	Halsted Meadows	Aug. 4, 1891	♂	
Palmer	295	Halsted Meadows	Aug. 4, 1891	♂	
Palmer	316	Horse Corral Meadows	Aug. 11, 1891	♂, imm	
Bailey	3178	Kaweah River, East Fork, Mineral King	Aug. 5, 1891	♂	
Bailey	3183	Kaweah River, East Fork, Mineral King	Aug. 6, 1891	♂	
Bailey	3129	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♀	
Bailey	3134	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♂	
Bailey	3135	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♂	
Bailey	3128	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♀	
Bailey	3126	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♂	
Nelson	1241	Kings River	Aug. 18, 1891	♂	
Nelson	1243	Kings River	Aug. 19, 1891	♀	
Bailey	3259	Mineral King	Sept. 12, 1891	♀	
Fisher	961	Mineral King	Sept. 10, 1891	♂	
Bailey	3137	Mineral King	July 31, 1891	♀, ad	
Bailey	3143	Mineral King	Aug. 1, 1891	♂, imm	
Bailey	3144	Mineral King	Aug. 1, 1891	♀, imm	
Stephens	525	Monache Meadows	May 24, 1891	♀	
Stephens	524	Monache Meadows	May 24, 1891	♀	
Stephens	860	Mulkey Meadows	Aug. 27, 1891	♂	
Stephens	848	Mulkey Meadows	Aug. 26, 1891	♂	
Stephens	851	Mulkey Meadows	Aug. 26, 1891	♂	
Stephens	849	Mulkey Meadows	Aug. 26, 1891	♀	
Stephens	837	Olancha Peak	Aug. 22, 1891	♀	
Stephens	831	Olancha Peak	Aug. 21, 1891	♂	
Stephens	846	Olancha Peak	Aug. 24, 1891	♂	
Fisher	933	Round Valley	Aug. 28, 1891	♂	
Stephens	532	Summit Meadow	May 27, 1891	♀	
Stephens	533	Summit Meadow	May 27, 1891	♂	
Fisher	942	Whitney Meadows	Sept. 1, 1891	♀	

Eutamias callipeplus
Tamias speciosus callipeplus

Mr. Nelson captured five Mount Piños Chipmunks on the peak bearing that name on October 20. They were rather common on the upper 500 feet of Mount Piños (McGill Peak), to which area they seemed to be strictly limited in distribution.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1346	Mount Piños	Oct. 20, 1891	♀	
Nelson	1345	Mount Piños	Oct. 20, 1891	♀	
Nelson	1344	Mount Piños	Oct. 20, 1891	♂	
Nelson	1343	Mount Piños	Oct. 20, 1891	♂	
Nelson	1342	Mount Piños	Oct. 20, 1891	♂	

Eutamias townsendii senex
Tamias senex senex

Mr. Nelson caught 5 specimens of the Large Mountain Chipmunk at the head of the Merced River on August 2 or 4.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1199	Merced River, near head	Aug. 4, 1891	♂	
Nelson	1193	Merced River, near head	Aug. 2, 1891	♀	
Nelson	1192	Merced River, near head	Aug. 2, 1891	♀	
Nelson	1191	Merced River, near head	Aug. 2, 1891	♂	
Nelson	1190	Merced River, near head	Aug. 2, 1891	♂	

Eutamias palmeri
Tamias palmeri

Messrs. Palmer and Nelson caught 13 Palmer's Chipmunks on Charleston Peak on February 13. They were mainly on sunny slopes on the north side of a cañon near that peak.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	83	Charleston Peak	Feb. 13, 1891	♂	
Palmer	82	Charleston Peak	Feb. 13, 1891	♂	
Nelson	438	Charleston Peak	Feb. 13, 1891	♂	
Nelson	437	Charleston Peak	Feb. 13, 1891	♂	
Nelson	436	Charleston Peak	Feb. 13, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	435	Charleston Peak	Feb. 13, 1891	♂	
Nelson	434	Charleston Peak	Feb. 13, 1891	♂	
Nelson	433	Charleston Peak	Feb. 13, 1891	♂	
Nelson	432	Charleston Peak	Feb. 13, 1891	♂	
Nelson	431	Charleston Peak	Feb. 13, 1891	♂	
Nelson	430	Charleston Peak	Feb. 13, 1891	♂	
Nelson	429	Charleston Peak	Feb. 13, 1891	♂	
Nelson	428	Charleston Peak	Feb. 13, 1891	♂	

Eutamias quadrimaculatus
Tamias quadrimaculatus

The Long-eared Chipmunk was only captured at Fish Camp and Michigan Bluff. At the latter location, they were very scarce around that town, but they were abundant seven miles up a ridge near town.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1237	Fish Camp	Aug. 13, 1891	♀	
Nelson	1235	Fish Camp	Aug. 13, 1891	♀	
Bailey	3462	Michigan Bluff	Oct. 28, 1891	♀	
Bailey	3461	Michigan Bluff	Oct. 28, 1891	♀	
Bailey	3460	Michigan Bluff	Oct. 28, 1891	♂	
Bailey	3459	Michigan Bluff	Oct. 28, 1891	♂	
Bailey	3458	Michigan Bluff	Oct. 28, 1891	♂	

Eutamias merriami kernensis
Tamias merriami kernensis

With the exception of Havilah and Walker Pass, the Kern Basin Chipmunk's distribution was generally limited to the Kern River Basin. In that basin, they were collected at or within 12 miles of Kernville, and at Onyx. On the west slope of Walker Pass, they were common on rocks and among pines and oak brush above 4,500 feet. This taxon was observed by Mr. Bailey at Trout Meadows in August or September.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3041	Havilah	July 13, 1891	♀	
Bailey	3042	Havilah	July 13, 1891	♂	
Bailey	3043	Havilah	July 13, 1891	♂	
Fisher	761	Kernville	July 11, 1891	♀	
Fisher	766	Kernville	July 11, 1891	♂	
Fisher	765	Kernville	July 11, 1891	♂	
Fisher	764	Kernville	July 11, 1891	♂	
Fisher	763	Kernville	July 11, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	762	Kernville	July 11, 1891	♂	
Bailey	3039	Kernville	July 11, 1891	♀	
Bailey	3040	Kernville	July 11, 1891	♀, imm	
Bailey	3038	Kernville	July 11, 1891	♂	
Palmer	194	Kernville, 10 miles south of	June 23, 1891	♂, ad	
Palmer	195	Kernville, 11 miles south of	June 23, 1891	♀, ad	
Palmer	196	Kernville, 12 miles south of	June 23, 1891	♀, imm	
Bailey	3037	Onyx	July 10, 1891	♂	
Bailey	2978	Walker Pass, west slope	July 3, 1891	♂, imm	
Fisher	715	Walker Pass, west slope	July 2, 1891	♀	
Bailey	2977	Walker Pass, west slope	July 3, 1891	♀, imm	
Bailey	2976	Walker Pass, west slope	July 2, 1891	♀, ad	
Fisher	714	Walker Pass, west slope	July 2, 1891	♀	
Fisher	718	Walker Pass, west slope	July 3, 1891	♀	
Fisher	713	Walker Pass, west slope	July 2, 1891	♀	
Bailey		Trout Meadows			OSTB Aug. 1 & Sept. 30, 1891

Eutamias merriami merriami
Tamias merriami merriami

The Death Valley Expedition biologists collected Merriam's Chipmunks at a large number of localities as identified in the table below. It also was observed at Fort Tejon and Pozo Summit. On the East Fork of the Kaweah River, this large chipmunk was abundant in chaparral and oaks from 6,000 feet down to 2,000 feet and probably lower in elevation. They were rather common from Fort Tejon to the top of Mt. McGill (i.e., Mount Piños) where they frequented oak trees in the morning and evening. Several were seen between La Panza and Pozo. Near San Simeon they were found from a few hundred feet above sea level to the tops of the mountains, but they were not numerous. In the Santa Yñez Range they were most common on the pine-capped ridge near San Simeon. On Frazier Mountain, they were abundant.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	205	Cañada de las Uvas	June 28, 1891	♂	
Palmer	254	Fort Tejon	July 7, 1891	♀	
Palmer	277	Fort Tejon	July 10, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	217	Fort Tejon	July 4, 1891	♂	
Palmer	250	Fort Tejon	July 6, 1891	♂	
Palmer	255	Fort Tejon	July 7, 1891	♀	
Palmer	256	Fort Tejon	July 7, 1891	♀	
Palmer	257	Fort Tejon	July 7, 1891	♂	
Palmer	265	Fort Tejon	July 8, 1891	♀	
Palmer	266	Fort Tejon	July 8, 1891	imm	
Palmer	267	Fort Tejon	July 8, 1891	♀, imm	
Palmer	268	Fort Tejon	July 8, 1891	♀	
Palmer	222	Fort Tejon	July 5, 1891	♂	
Palmer	272	Frazier Mountain	Jul. 9, 1891	♀	
Bailey	3122	Kaweah River, East Fork, Three Rivers to Mineral King	July 28, 1891	♂, imm	
Bailey	3109	Kaweah River, East Fork, Three Rivers to Mineral King	July 27, 1891	♀	
Nelson	1242	Kings River	Aug. 18, 1891	♀	
Nelson	1341	Mount Piños	Oct. 20, 1891	♀	
Nelson	1339	Mount Piños	Oct. 20, 1891	♂	
Nelson	1338	Mount Piños	Oct. 20, 1891	♂	
Nelson	1340	Mount Piños	Oct. 20, 1891	♀	
Nelson	1332	San Emigdio Cañon, head of	Oct. 19, 1891	♂	
Nelson	1312	San Emigdio Cañon, head of	Oct. 17, 1891	♀	
Nelson	1476	San Simeon, mountains near to	Nov. 15, 1891	♀	
Nelson	1475	San Simeon, mountains near to	Nov. 15, 1891	♂	
Nelson	1301	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1300	Tejon Pass, 8 miles west of	Oct. 15, 1891	♂	
Nelson	1302	Tejon Pass, 8 miles west of	Oct. 15, 1891	♀	
Nelson	1310	Tejon Pass, 8 miles west of	Oct. 16, 1891	♂	
Nelson	1311	Tejon Pass, 8 miles west of	Oct. 16, 1891	♂	
Nelson	1294	Tejon Pass, 8 miles west of	Oct. 15, 1891	♂	
Nelson	1204	Yosemite Valley	Aug. 6, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1211	Yosemite Valley	Aug. 7, 1891	♀	
Nelson	1210	Yosemite Valley	Aug. 7, 1891	♀	
Nelson	1209	Yosemite Valley	Aug. 7, 1891	♂	
Nelson	1208	Yosemite Valley	Aug. 7, 1891	♂	
Nelson		Fort Tejon			OSTB Oct. 14 & 28, 1891
Nelson		Pozo Summit			OSTB Oct. 28 & Nov. 3, 1891

Eutamias merriami pricei
Tamias merriami pricei

The Santa Cruz Chipmunk was captured only at Boulder Creek and Mr. Bailey collected them there between October 12 and 15. They were common there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3412	Boulder Creek	Oct. 15, 1891	♂	
Bailey	3411	Boulder Creek	Oct. 15, 1891	♂	
Bailey	3409	Boulder Creek	Oct. 14, 1891	♀	
Bailey	3392	Boulder Creek	Oct. 13, 1891	♂, imm	
Bailey	3390	Boulder Creek	Oct. 12, 1891	♀	
Bailey	3389	Boulder Creek	Oct. 12, 1891	♀	
Bailey	3388	Boulder Creek	Oct. 12, 1891	♀	

Eutamias dorsalis utahensis
Tamias dorsalis utahensis

The Utah Cliff Chipmunk was captured only one time during the Death Valley Expedition. On May 11, Mr. Bailey collected a male (Bailey catalog # 2760) in the Beaver Dam Mountains.

Sciurus douglasi albolimbatus
Tamiasciurus douglasii albolimbatus

The Sierra Chickaree was collected at several locations in the southern portion of the Sierra Nevada as identified in the table below. One was also collected in the central portion of that mountain range at Michigan Bluff. And one was observed at Mammoth Pass by Mr. Nelson sometime between July 21 and August 21. Near Mammoth Pass, they were common on the east side of the pass between 8,400 and 9,000 feet. In general, they were common on the west side of the Sierra up to 9,500 feet, particularly in the *Pinus murrayana* belt where they built large globular nests of pine needles. Their common note was a rapid trilling or bubbling noise which was liquid and musical in effect and difficult to locate.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	188	Big Cottonwood Meadows	Aug. 12, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Dutcher	70	Big Cottonwood Meadows	July 10, 1891	♂	
Dutcher	88	Big Cottonwood Meadows	July 15, 1891	♂	
Dutcher	146	Big Cottonwood Meadows	July 29, 1891	♂	
Dutcher	198	Big Cottonwood Meadows	Aug. 16, 1891	♀	
Dutcher	199	Big Cottonwood Meadows	Aug. 17, 1891	♂	
Dutcher	145	Big Cottonwood Meadows	July 29, 1891	♂	
Bailey	3211	Big Whitney Meadows	Aug. 20, 1891	♀	
Fisher	939	Big Whitney Meadows	Aug. 31, 1891	♂, ad	
Stephens	801	Bishop Creek	Aug. 4, 1891	♀	
Bailey	3204	Dick's Ranch	Aug. 13, 1891	♀	
Palmer	304	Halsted Meadows	Aug. 5, 1891	♀	
Fisher	845	Halsted Meadows	Aug. 4, 1891	♀, ad	
Fisher	877	Halsted Meadows	Aug. 7, 1891	♂, ad	
Palmer	308	Halsted Meadows	Aug. 6, 1891	♂	
Palmer	309	Halsted Meadows	Aug. 6, 1891	♀	
Bailey	3130	Kaweah River, East Fork, Three Rivers to Mineral King	July 30, 1891	♀, ad	
Nelson	1251	Kern River Lakes	Sept. 4, 1891	♀	
Fisher	918	Kings River, South Fork	Aug. 15, 1891	♀	
Stephens	755	Mammoth	July 22, 1891	♀	
Nelson	1125	Mammoth	July 22, 1891	♀	
Nelson	1124	Mammoth	July 22, 1891		
Nelson	1147	Mammoth	July 24, 1891	♀	
Nelson	1153	Mammoth	July 25, 1891	♂	
Stephens	752	Mammoth	July 22, 1891	♂	
Nelson	1196	Merced River, near head	Aug. 3, 1891	♀	
Bailey	3456	Michigan Bluff	Oct. 27, 1891	♀	
Bailey	3147	Mineral King	Aug. 1, 1891	♂, ad	
Fisher	952	Mineral King	Sept. 9, 1891	♀	
Stephens	523	Monache Meadows	May 24, 1891	♂	
Nelson	1174	San Joaquin River, near head	July 28, 1891	♂	
Nelson	1158	San Joaquin River, near head	July 27, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Stephens	784	San Joaquin River, near head	July 28, 1891	♂	
Stephens	790	San Joaquin River, near head	July 29, 1891	♂	
Nelson		Mammoth Pass			OSTB July 21 & Aug. 21, 1891
Nelson		Sierra Nevada, southern portion, west slope			OSTB July 21 & Aug. 21, 1891

Sciurus griseus subsp.
Sciurus griseus

There are three subspecies of *Sciurus griseus*, i.e., *griseus*, *nigripes*, and *anthonyi*. Mr. Nelson saw at least one *Sciurus griseus* at Pozo on October 31, but the subspecies could not be determined based on its geographic location. Similarly, Mr. Palmer saw one at Tejon Pass on July 5, and its subspecies identity also could not be determined for the same reason.

Sciurus griseus anthonyi
Sciurus griseus anthonyi

At Fort Tejon, the Anthony Gray Squirrel descends almost as low as the fort to feed on acorns that were abundant in the ravines. Mr. Palmer collected a total of four specimens there on July 6 and 7. He shot an adult female near the summit of Frazier Mountain on July 9. Near Frasier Mountain on July 12, this species was feeding on the green half-grown cones of *Pinus coulteri*. Mr. Nelson collected one of these animals at Gaviota Pass in December.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	252	Fort Tejon	July 7, 1891	♂	
Palmer	251	Fort Tejon	July 7, 1891	♂	
Palmer	249	Fort Tejon	July 6, 1891	♂	
Palmer	248	Fort Tejon	July 6, 1891	♂	
Palmer	273	Frazier Mountain	Jul. 9, 1891	♀	
Nelson	1628	Gaviota Pass	Dec. 10, 1891	♂	

Sciurus griseus griseus
Sciurus griseus griseus

The California Gray Squirrel is one of three subspecies of *Sciurus griseus*. This subspecies was collected at Colfax, Kern River Lakes, Kings River Cañon, Michigan Bluff, Trout Meadows, the west slope of Walker Pass, and at Wawona. It was observed by Mr. Bailey at Auburn sometime between October 19 and 24. He also observed that taxon in the southern end of the Sierra Nevada mountain range sometime between early August and the end of September.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3454	Colfax	Oct. 26, 1891	♀	
Fisher	947	Kern River Lakes	Sept. 6, 1891	♀	
Palmer	319	Kings River Cañon	Aug. 14, 1891	♀	
Bailey	3463	Michigan Bluff	Oct. 28, 1891	♂, ad	
Bailey	3455	Michigan Bluff	Oct. 27, 1891	♀	
Fisher	951	Trout Meadows	Sept. 7, 1891	♀	
Fisher	950	Trout Meadows	Sept. 7, 1891	♂	
Bailey	3245	Trout Meadows	Sept. 7, 1891	♂	
Bailey	3203	Trout Meadows	Aug. 12, 1891	♂	
Fisher	716	Walker Pass, west slope	July 2, 1891	♂	
Nelson	1228	Wawona	Aug. 9, 1891	♀	
Nelson	1227	Wawona	Aug. 9, 1891	♀	
Bailey		Auburn			OSTB Oct. 19 & 24, 1891
Bailey		Sierra Nevada, southern end			OSTB Aug. 1 & Sept. 30, 1891

Sciurus griseus nigripes
Sciurus griseus nigripes

The Black-footed Gray Squirrel was collected by Mr. Bailey at Boulder Creek, where it was common among the redwoods and Douglas spruce where oaks grew among them. It was expert at hiding and keeping trees between itself and the hunter once it was frightened. Mr. Nelson collected them in the mountains near San Simeon where they were not numerous anywhere, but they were generally distributed from the tops of mountains down to lower edge of the oaks.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3400	Boulder Creek	Oct. 14, 1891	♀	
Bailey	3391	Boulder Creek	Oct. 12, 1891	♂	
Bailey	3386	Boulder Creek	Oct. 12, 1891	♀	
Nelson	1504	San Simeon, mountains near to	Nov. 18, 1891	♀	
Nelson	1496	San Simeon, mountains near to	Nov. 17, 1891	♀	

FAMILY PETAURISTIDAE

Glaucomys sabrinus lascivus
Glaucomys sabrinus lascivus

The members of the Death Valley Expedition did not collect, nor did they see, any Sierra Nevada Flying Squirrels during their fieldwork. Local citizens, however, told Expedition members this taxon was present in the vicinity of Michigan Bluff (Bailey 1891-29) and at Mulkey Meadows (Dutcher 1891-3).

FAMILY CASTORIDAE

Castor canadensis frondator
Castor canadensis

None of the Death Valley Expedition biologists collected or saw a Sonora Beaver during that expedition. The Nelson 1891-29 special report, however, states that "A number of fresh beaver tracks were seen on the muddy bank of the Colorado [River]" sometime between March 10 and 13, 1891. Based on that location, those tracks would likely have been associated with the Sonora beaver.

Castor subauratus
Castor canadensis subauratus

None of the Death Valley Expedition biologists collected or saw a Golden Beaver during the Expedition. The Nelson 1891-25 special report, however, states that *Castor canadensis* "… was a formerly abundant species in the Tulare Lake and its tributaries but is extinct at present except for a very few individuals at a few places." That text suggests that local residents reported that taxon to Mr. Nelson.

ORDER LAGOMORPHA

FAMILY OCHOTONIDAE

Ochotona schisticeps
Ochotona princeps schisticeps

As was expected, the Pika was collected only at high elevation sites, and it was collected only in the High Sierra at Big Cottonwood Meadows, at high elevation sites along Bishop Creek and the North Fork of the Kern River, at Mammoth, Mineral King, two miles south of Mineral King, Onion Valley, Pine City, Rock Creek, and the summit ridge of the White Mountains. Mr. Nelson observed it at Mammoth sometime in July or August.

Mr. Bailey noted this taxon was common on rocky peaks high up about Mineral King. It lived among broken rocks and followed them down to where there were no trees or to 200 feet below timberline (Bailey 1891-21). Mr. Nelson saw them at Mammoth between 9,000 and 9,600 feet and thought they undoubtedly extended a thousand feet higher there (Nelson 1891-27). Between the San Joaquin and Merced rivers he saw them from 9,000 to 10,500 feet (Nelson 1891-27). On Bishop Creek they were common in "rock slides" at elevations 8,000 feet and higher (Stephens 1891-63).

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	926	Big Cottonwood Meadows	Aug. 26, 1891	♂	
Fisher	925	Big Cottonwood Meadows	Aug. 26, 1891	♂, imm	
Stephens	814	Bishop Creek	Aug. 9, 1891	♀	
Stephens	804	Bishop Creek	Aug. 7, 1891	♂, juv	
Stephens	815	Bishop Creek	Aug. 9, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3236	Kern River, North Fork, near head	Aug. 25, 1891	♂	
Nelson	1157	Mammoth	July 25, 1891	♂	
Fisher	963	Mineral King	Sept. 10, 1891	♂	
Bailey	3150	Mineral King	Aug. 1, 1891	♀	
Fisher	955	Mineral King	Sept. 9, 1891	♀	
Fisher	956	Mineral King	Sept. 9, 1891	♀	
Fisher	957	Mineral King	Sept. 9, 1891	♀	
Fisher	958	Mineral King	Sept. 9, 1891	♀, imm	
Fisher	960	Mineral King	Sept. 9, 1891	♂	
Fisher	964	Mineral King	Sept. 10, 1891	♀	
Fisher	965	Mineral King	Sept. 10, 1891	♀, imm	
Fisher	967	Mineral King	Sept. 11, 1891	♂	
Fisher	968	Mineral King	Sept. 11, 1891	♀	
Fisher	969	Mineral King	Sept. 11, 1891	♂	
Bailey	3149	Mineral King	Aug. 1, 1891	♀, ad	
Bailey	3148	Mineral King	Aug. 1, 1891	♀, ad	
Fisher	959	Mineral King	Sept. 9, 1891	♂	
Bailey	3249	Mineral King, 2 miles south of	Sept. 9, 1891	♀	
Bailey	3247	Mineral King, 2 miles south of	Sept. 9, 1891	♂	
Bailey	3248	Mineral King, 2 miles south of	Sept. 9, 1891	♀	
Bailey	3250	Mineral King, 2 miles south of	Sept. 9, 1891	♀	
Bailey	3251	Mineral King, 2 miles south of	Sept. 9, 1891	♀	
Bailey	3252	Mineral King, 2 miles south of	Sept. 9, 1891	♀, imm	
Bailey	3257	Mineral King, 2 miles south of	Sept. 11, 1891	♂	
Bailey	3256	Mineral King, 2 miles south of	Sept. 11, 1891	♂	
Stephens	640	Onion Valley	June 22, 1891	♂	
Stephens	773	Pine City	July 25, 1891	♀	
Stephens	774	Pine City	July 25, 1891	♂	
Stephens	864	Rock Creek	Aug. 30, 1891	♀	
Stephens	863	Rock Creek	Aug. 30, 1891	♂	
Nelson	1090	White Mountains, summit	July 10, 1891	♂	
Nelson	1088	White Mountains, summit	Jul. 9, 1891	♀	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1087	White Mountains, summit	Jul. 9, 1891	♂	
Nelson	1086	White Mountains, summit	July 8, 1891	♀	
Nelson	1085	White Mountains, summit	July 8, 1891	♀	
Nelson	1080	White Mountains, summit	July 8, 1891	♀	
Nelson	1079	White Mountains, summit	July 8, 1891	♀	
Nelson		Mammoth			OSTB July 21 & Aug. 21, 1891

FAMILY LEPORIDAE

Lepus campestris sierrae
Lepus townsendii sierrae

The Sierra White-tailed Jackrabbit was not collected during the Death Valley Expedition. Mr. Nelson, however, saw a large rabbit dive into the dwarfed pines at timberline near Mammoth sometime between July 21 and August 22, 1891 (Nelson 1891-27). It ranged a few hundred feet above and below this point and appeared to be the large-footed snow rabbit of the Sierras. His efforts to secure one of these animals were futile, though one was seen at timberline and tracks were seen at various other places. They were well known to stockmen and others familiar with the higher parts of those mountains.

Lepus campestris townsendi
Lepus townsendii townsendii

The Western White-tailed Jackrabbit was not collected or directly observed by Death Valley Expedition biologists. At Battle Mountain sometime between October 18 and November 4, 1890, Mr. Bailey was told by local citizens that a big rabbit that turned white in winter was said to be common among the hills about Battle Mountain (Bailey 1890-6). Based on that description, the geographic ranges of other jackrabbit taxa, and that location, it is possible the purported rabbit was a Western White-tailed Jackrabbit.

Lepus californicus
Lepus californicus californicus

The California Jack Rabbit was collected at Auburn, Morro, Rocklin, 12 miles west of San Luis Obispo, and along the Santa Maria River. Mr. Bailey saw one at Monterey in late September or early October, but it appeared to be scarce. This jack rabbit was found from San Simeon to Carpinteria but was only common in a few places.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3437	Auburn	Oct. 21, 1891	♂	
Nelson	1448	Morro	Nov. 9, 1891	♀	
Nelson	1443	Morro	Nov. 7, 1891		

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3453	Rocklin	Oct. 24, 1891	♂	
Bailey	3452	Rocklin	Oct. 24, 1891	♀	
Nelson	1559	San Luis Obispo, 12 miles west of	Nov. 28, 1891	♂	
Nelson	1558	San Luis Obispo, 12 miles west of	Nov. 28, 1891	♂	
Nelson	1567	Santa Maria River	Dec. 1, 1891	♀	
Nelson	1566	Santa Maria River	Dec. 1, 1891	♂	
Bailey		Monterey			OSTB Sept. 28 & Oct. 9, 1891

Lepus californicus deserticola
Lepus californicus deserticola (31), *L. californicus californicus* (1)

The Colorado Desert Jack Rabbit was collected in Arizona, Nevada, and California. In Arizona, it was collected at Beaver Dam.

This jack rabbit was collected in Nevada at Blossom Spring near Battle Mountain, Las Vegas Ranch, Pahranagat Valley, and in Pahrump Valley.

In California, this taxon was collected at the Alabama Hills, Antelope Valley, Ash Creek, Benton Station, 25 miles west of Benton, 10 miles southwest of Daggett, Furnace Creek, Garlick Spring, Hesperia, Lancaster, Lone Pine where it was common, 10 miles south of Mohave, Perognathus Flat, Raymond Well, Saratoga Springs, Victor, and Walker Basin. It was observed at Coso and Coso Valley, Cottonwood Creek in the Panamint Mountains, the Grapevine Mountains, at Waucoba Mountain, Little Lake, Saline Valley, and the west slope of Walker Pass.

Only one of these rabbits was seen on the west slope of Walker Pass. This jack rabbit was rather common all through Death Valley, at Ash Creek, Raymond Well in Salt Wells Valley, Pahrump Ranch, and in Pahrump Valley. They seemed to be scarce at Blossom Spring and in the Battle Mountain area. A few were seen in Saline Valley extending from the bottom of the valley to the foot of the slope of Waucoba Mountain. They were common in Owens River Valley.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2301	Alabama Hills	Dec. 18, 1890	♀	
Palmer	210	Antelope Valley	July 2, 1891	♂	
Palmer	211	Antelope Valley	July 2, 1891	♀	
Stephens	556	Ash Creek	June 1, 1891	♂	
Bailey	2756	Beaver Dam	May 9, 1891	♂, juv	
Stephens	739	Benton Station	July 16, 1891	♂	
Stephens	793	Benton, 25 miles west of	July 31, 1891	♀	
Bailey	2074	Blossom Spring	Nov. 4, 1890	♂	
Fisher	8	Daggett, 10 miles southwest of	Jan. 7, 1891	♂	

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	691	Furnace Creek	Mar. 25, 1891	♀	
Fisher	78	Furnace Creek	Jan. 26, 1891	♂	
Stephens	269	Furnace Creek	Apr. 10, 1891	♀	
Fisher	62	Furnace Creek	Jan. 24, 1891	♀	
Palmer	135	Garlick Spring	Mar. 14, 1891	♂	
Fisher	4	Hesperia	Jan. 5, 1891	♂, ad	
Stephens	869	Lancaster	Sept. 11, 1891	♀	
Bailey	2589	Las Vegas Ranch	Mar. 11, 1891	♀	
Fisher	686	Lone Pine	June 11, 1891	♀, ad	
Fisher	681	Lone Pine	June 9, 1891	♀, imm	
Fisher	680	Lone Pine	June 9, 1891	♂, ad	
Fisher	687	Lone Pine	June 11, 1891	♀, juv	
Stephens	868	Mojave, 10 miles south of	Sept. 10, 1891	♀	
Bailey	2857	Pahranagat Valley	May 25, 1891	♀, imm	
Bailey	2854	Pahranagat Valley	May 24, 1891	♀	
Bailey	2545	Pahrump Valley	Mar. 5, 1891	♂	
Nelson	458	Pahrump Valley	Feb. 16, 1891	♀	
Bailey	2686	Perognathus Flat	Apr. 16, 1891	♀	
Stephens	369	Raymond Well	May 1, 1891	♀	
Nelson	366	Saratoga Springs	Feb. 2, 1891	♂	
Fisher	6	Victor	Jan. 6, 1891	♂	
Fisher	7	Victor	Jan. 6, 1891	♂	
Fisher	771	Walker Basin	July 14, 1891		
Palmer		Coso			OSTB May 17 & 29, 1891
Palmer		Coso Valley			OSTB May 7 & 28, 1891
Nelson		Cottonwood Creek, Panamint Mountains			OSTB May 4 & June 15, 1891
Nelson		Grapevine Mountains			OSTB May 4 & June 15, 1891
Nelson		Inyo Mountains, Waucoba Mountain			OSTB June 24 & July 4, 1891
Stephens		Little Lake			OSTB May 6 & 11, 1891
Nelson		Saline Valley			OSTB June 24 & July 4, 1891
Nelson		Saratoga Springs			OSTB Feb. 12 & 28, 1891
Bailey		Walker Pass, west slope			OSTB July 2–9, 1891

Lepus californicus richardsoni
Lepus californicus californicus

The San Joaquin Valley Jack Rabbit was collected at Alila, Bakersfield, Fresno where they were not numerous, Poso, and San Emigdio. Mr. Bailey observed one at Visalia sometime between July 26 and August 10.

This jack rabbit is very numerous in San Joaquin Valley from Bakersfield to Visalia and to the foothills of the Sierra Nevada. It was not seen above 800 feet near Visalia.

Mr. Nelson noted they were excessively abundant in the southern end of the San Joaquin Valley. The country from near Fresno to Bakersfield has been the scene of numerous "rabbit drives" during the past few years and many thousands of these animals have been driven into a pound with broad wings by beaters and killed with clubs. Despite this wholesale destruction, the rabbits were still very abundant (Nelson 1891-25). The well-marked trails made by them as they traveled to water in Kern River were seen leading for miles across the grassy plains. They were a great pest to the farmers and fruit growers.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1267	Alila	Oct. 9, 1891	♀	
Nelson	1266	Alila	Oct. 9, 1891	♀	
Fisher	788	Bakersfield	July 18, 1891	♀, ad	
Bailey	3078	Bakersfield	July 20, 1891	♂	
Bailey	3284	Fresno	Sept. 22, 1891	♀, ad	
Nelson	1273	Poso	Oct. 10, 1891	♂	
Nelson	1352	San Emigdio	Oct. 22, 1891	♀	
Bailey		Visalia			OSTB July 26 & Aug. 10, 1891

Sylvilagus nuttalli grangeri
Sylvilagus nuttallii grangeri

The Black Hills Cottontail was collected in Nevada along the Reese River at the Lander–Nye County line, although it seemed to be scarce there.

In California, it was collected along the summit of the White Mountains, where it was found sparingly from 8,000 to 9,500 feet, and along portions of Willow Creek in the Panamint Mountains where it was rather common in the sagebrush belt.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	2177	Reese River, Lander–Nye County line	Nov. 20, 1890	♀	
Nelson	1105	White Mountains, summit	July 14, 1891	♀	
Nelson	884	Willow Creek, Panamint Mountains	May 21, 1891	♀	
Nelson	883	Willow Creek, Panamint Mountains	May 19, 1891	♀	
Nelson	869	Willow Creek, Panamint Mountains, head of	May 17, 1891	♀	
Nelson	856	Willow Creek, Panamint Mountains, head of	May 12, 1891	♀	

Sylvilagus auduboni arizonae
Sylvilagus audubonii arizonae

In Nevada, the Arizona Cottontail was collected at Ash Meadows, Corn Creek, Las Vegas Valley, and Pahrump Valley. They were common in both of those valleys, and they were particularly abundant in the latter valley in the vicinity of mesquite patches.

In California, this rabbit was collected at Coso, Furnace Creek, Hesperia, Resting Springs, and at Lone Pine and Olancha in the Owens Valley where it was common at both localities. It was also observed in that valley at Bishop and Independence creeks.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Fisher	337	Ash Meadows	Mar. 5, 1891	♀	
Fisher	287	Ash Meadows	Mar. 2, 1891	♂, ad	
Fisher	362	Ash Meadows	Mar. 8, 1891	♀	
Fisher	378	Ash Meadows	Mar. 11, 1891	♂	
Stephens	108	Ash Meadows	Mar. 4, 1891	♀	
Bailey	2620	Corn Creek	Mar. 14, 1891	♂	
Fisher	630	Coso	May 22, 1891	♀, imm	
Fisher	598	Coso	May 19, 1891	♀, imm	
Stephens	270	Furnace Creek	Apr. 10, 1891	♀	
Fisher	3	Hesperia	Jan. 4, 1891	♂	
Nelson	654	Las Vegas Valley	Mar. 13, 1891	♂	
Palmer	189	Lone Pine	June 11, 1891	♂	
Bailey	2245	Lone Pine	Dec. 13, 1890	♂	
Stephens	470	Olancha	May 17, 1891	♀	
Stephens	487	Olancha	May 19, 1891	♂	
Nelson	569	Pahrump Valley	Feb. 28, 1891	♂	
Nelson	589	Pahrump Valley	Mar. 4, 1891	♀	
Nelson	394	Resting Springs	Feb. 9, 1891	♂	
Fisher	162	Resting Springs	Feb. 9, 1891	♂	
Fisher	198	Resting Springs	Feb. 15, 1891	♀	
Fisher	186	Resting Springs	Feb. 12, 1891	♀	
Stephens	6	Resting Springs	Feb. 14, 1891	♂	
Fisher	163	Resting Springs	Feb. 9, 1891	♀	
Stephens		Bishop Creek			OSTB August 4 & 10, 1891
Stephens		Independence Creek			OSTB June 18 & 23, 1891

Sylvilagus auduboni sanctidiegi
Sylvilagus audubonii arizonae

The San Diego Cottontail was collected only near Norhoff and at Santa Paula. All of the specimens relating to this taxon were collected by Mr. Nelson in late December.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1733	Nordhoff, near to	Dec. 25, 1891	♀	
Nelson	1731	Nordhoff, near to	Dec. 25, 1891	♂	
Nelson	1721	Nordhoff, near to	Dec. 24, 1891	♀	
Nelson	1720	Nordhoff, near to	Dec. 24, 1891	♀	
Nelson	1769	Santa Paula	Dec. 31, 1891	♀	
Nelson	1768	Santa Paula	Dec. 31, 1891	♂	
Nelson	1744	Santa Paula	Dec. 28, 1891	♀	

Sylvilagus auduboni vallicola
Sylvilagus audubonii audubonii

The San Joaquin Cottontail was collected in the Cañada de las Uvas and at Fort Tejon where they were common, 10 miles south of Kernville, at Poso and Pozo, Pruit's Ranch, San Emigdio, along the San Joaquin River, five miles west of Tejon Pass, in the Temploa Mountains, at Three Rivers, and Walker Basin.

This cottontail was common at Walker Basin, from the base to the summit of Temploa Mountains, and at Mount Piños (McGill Peak). At the latter two locations, it was found both in dense thickets and on open ground. On Mount Piños, they usually lived in old badger or spermophile holes.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Palmer	261	Cañada de las Uvas	July 7, 1891	♂	
Palmer	270	Fort Tejon	July 8, 1891	♂	
Palmer	192	Kernville, 10 miles south of	June 23, 1891	♀, imm	
Palmer	193	Kernville, 10 miles south of	June 23, 1891	imm	
Nelson	1272	Poso	Oct. 10, 1891	♀	
Nelson	1415	Pozo	Oct. 30, 1891	♂	
Fisher	746	Pruit's Ranch	July 7, 1891	♂	
Bailey	3025	Pruit's Ranch	July 7, 1891	♂, ad	
Bailey	3026	Pruit's Ranch	July 8, 1891	♂, imm	
Fisher	734	Pruit's Ranch	July 6, 1891	♂	
Fisher	757	Pruit's Ranch	Jul. 9, 1891	♀	
Fisher	725	Pruit's Ranch	July 4, 1891	♀	
Nelson	1353	San Emigdio	Oct. 22, 1891	♀	
Nelson	1239	San Joaquin River	Aug. 14, 1891	♀	
Nelson	1290	Tejon Pass, 5 miles west of	Oct. 14, 1891	♀	
Nelson	1385	Temploa Mountains	Oct. 26, 1891	♀	
Palmer	281	Three Rivers	July 27, 1891	♀	
Fisher	821	Three Rivers	July 27, 1891	♀, imm	
Fisher	772	Walker Basin	July 14, 1891	♀	

Sylvilagus bachmani
Sylvilagus bachmani bachmani (8), *S. bachmani ubericolor* (2)

The California Brush Rabbit was collected at three localities that included Auburn where it was common in thick brush, at Monterey where it was rather common in the thickest brush but difficult to collect, and at Morro where it was abundant from sea level to near the tops of adjoining mountains. At Morro Bay Mr. Nelson found them living among the dense marsh grass so moist that the specimens killed had wet feet. They were also equally numerous in sand dunes and the densest parts of brush-covered slopes there.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey	3451	Auburn	Oct. 24, 1891	♂	
Bailey	3428	Auburn	Oct. 20, 1891	♀	
Bailey	3379	Monterey	Oct. 6, 1891	♂	
Bailey	3297	Monterey	Sept. 29, 1891	♀	
Nelson	1453	Morro	Nov. 10, 1891	♀	
Nelson	1452	Morro	Nov. 10, 1891	♂	
Nelson	1451	Morro	Nov. 10, 1891	♂	
Nelson	1447	Morro	Nov. 9, 1891	♂	
Nelson	1446	Morro	Nov. 9, 1891	♀	
Nelson	1445	Morro	Nov. 8, 1891	♂	

Sylvilagus bachmani cinerascens
Sylvilagus bachmani cinerascens (5), *S. bachmani bachmani* (1)

The California Brush Rabbit was collected in southern California near Nordhoff, at Reche Cañon, Santa Paula, and the Temploa Mountains.

It was abundant in the Nordhoff (i.e., Ojai Valley) area. This rabbit was abundant in low brush in the Santa Clara River Valley where Santa Paula occurs and is called the "sage rabbit" there. It was not common at Reche Cañon and was associated with thick chaparral.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1736	Nordhoff, near to	Dec. 26, 1891	♀	
Nelson	1735	Nordhoff, near to	Dec. 26, 1891	♂	
Nelson	1734	Nordhoff, near to	Dec. 26, 1891	♂	
Stephens	909	Reche Cañon	Sept. 24, 1891	♀	
Nelson	1770	Santa Paula	Jan. 1, 1892	♀	
Nelson	1386	Temploa Mountains	Oct. 27, 1891	♂	

Sylvilagus bachmani ubericolor
Sylvilagus bachmani ubericolor

Mr. Bailey collected one female Redwood Brush Rabbit (Bailey catalog # 3387) at Boulder Creek on October 12. He found them common there, but the brush was so thick they were difficult to collect.

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FAMILY CERVIDAE

Cervus nannodes
Cervus elaphus nannodes

The Dwarf Elk was not collected or directly observed by the Death Valley Expedition biologists. Mr. Nelson was told by citizens in the San Joaquin Valley that a herd of about 75 individuals of these elk existed in a semidomesticated condition on the Miller Ranch between Buena Vista and Tulare Lake (Nelson 1891-25). Many of them have been roped and branded by the cowboys there but they were otherwise strictly protected by the ranch owner.

Odocoileus columbianus scaphiotus
Odocoileus columbianus scaphiotus

The Southern Black-tailed Deer was not collected by the Death Valley Expedition biologists. At Boulder Creek, local citizens reported to Mr. Bailey this kind of deer was common there, and he saw a number of pairs of horns of this animal (Bailey 1891-27). At Monterey, he saw five of these deer and was told they were common and not very wild in the local park (Bailey 1891-26).

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Bailey		Boulder Creek			OSTB Oct. 10 & 15, 1891
Bailey		Monterey			OSTB Sept. 28 & Oct. 9, 1891

Odocoileus hemionus californicus
Odocoileus hemionus californicus

Mr. Nelson shot a California Mule Deer near the head of the Merced River, and Mr. Palmer observed these deer at Fort Tejon and Tejon Pass where they were common. Local citizens stated they supposedly occurred at the heads of the South Fork of Kings River and Kern River, and at Michigan Bluff, Mount Piños, and Gaviota Pass.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	1195	Merced River, near head	Aug. 2, 1891	♂	
Palmer		Fort Tejon			OSTB June 28 & July 11, 1891
Palmer		Tejon Pass			OSTB June 28 & July 11, 1891

Odocoileus hemionus hemionus
Odocoileus hemionus hemionus

Mr. Nelson shot one Rocky Mountain Mule Deer at Mammoth and noted a few others in that area, and he shot another one on the summit of the White Mountains where they were quite common in a limited area on the northeastern slope of those mountains. In the Cottonwood Creek drainage in the White Mountains, he found they were quite common in a limited area on the northeastern slope of those mountains. A single buck in the velvet

was obtained from the head of that creek, which flowed down into Fish Lake Valley, but it was not assigned a catalog collection number.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	--	Cottonwood Creek, White Mountains	July 11, 1891		No catalog number for collection
Nelson	1152	Mammoth	July 24, 1891	♂	
Nelson	1103	White Mountains, summit	July 13, 1891	♂	

FAMILY ANTILOCAPRIDAE

Antilocapra americana americana
Antilocapra americana americana

Prong-horn Antelope were not collected or observed by the Death Valley Expedition biologists. Local citizens or Indians, however, conveyed several stories about these animals to the Expedition biologists.

They supposedly occurred at the north end of Saline Valley and on the broad tops of the northern end of the Inyo Mountains (Nelson 1891-21). They became extinct there in the summer of 1890 when the last one was killed by a Saline Valley Indian at Waucoba Mountain. The Indian who killed that animal showed Mr. Nelson its horns.

Quite a number of these animals are supposed to still exist on the northern half of the Carrizo Plain and along the base of the northern end of the Temploa Mountains (Nelson 1891-25). In this latter vicinity some disease was prevalent among the antelope the past autumn and range men told Mr. Nelson of finding them lying dead along the foothills without apparent cause.

They were formerly common along the foot of the Sierras at the head of Owens River but were extinct there in 1891 (Nelson 1891-27). They were formerly found along the western base of the Sierra Nevada between the San Joaquin and Kings rivers but were extinct there in 1891 (Nelson 1891-27). At a ranch near a post office in Antelope Valley, Mr. Palmer saw the horns of a specimen said to have been killed during the summer of 1889 (Palmer 1891-4). He was told that ten years ago (i.e., 1881) antelope were very abundant in Antelope Valley, but they have been nearly all killed. It is said that there were a few still to be found near Willow Spring 16 [sic, 13] miles southwest of Mohave in 1891 (Palmer 1891-4). Mr. R. M. Pogson, Superintendent at Tejon Ranch, informed Mr. Palmer there was still a small band of about 15 antelope in the valley near Tejon Ranch.

FAMILY BOVIDAE

Ovis canadensis nelsoni
Ovis canadensis nelsoni

Ten Desert Bighorn Sheep were shot by Mr. Nelson in Bighorn Cañon on June 4 and one is the type specimen for this subspecies of bighorn sheep. In Nevada, old heads and horns were observed at Indian camps in the Charleston Mountains and along the Colorado River southeast of Las Vegas Ranch. In California, tracks and horns of this sheep were seen in the Inyo and White mountains.

Biologist	Biologist#	Locality	Date	Sex, Age	Remarks
Nelson	951	Bighorn Cañon	June 4, 1891	♂	
Nelson	950	Bighorn Cañon	June 4, 1891	♀	
Nelson	949	Bighorn Cañon	June 4, 1891	♀	
Nelson	948	Bighorn Cañon	June 4, 1891	♂	
Nelson	947	Bighorn Cañon	June 4, 1891	♂	
Nelson	946	Bighorn Cañon	June 4, 1891	♀	
Nelson	945	Bighorn Cañon	June 4, 1891	♀	
Nelson	944	Bighorn Cañon	June 4, 1891	♂	
Nelson	943	Bighorn Cañon	June 4, 1891	♀	
Nelson	942	Bighorn Cañon	June 4, 1891	♀	
Bailey		Charleston Mountains			OSTB March 7 & 16, 1891
Nelson		Charleston Peak			OSTB Feb. 12 & 28, 1891
Bailey		Colorado River			OSTB March 7 & 16, 1891
Nelson		Inyo Mountains, near Lone Pine			OSTB June 24 & July 4, 1891
Nelson		White Mountains			OSTB July 1 and 21, 1891

Ovis canadensis sierrae
Ovis canadensis sierrae

There is no record of the Death Valley Expedition members collecting Sierra Nevada Bighorn. Mr. Nelson was told by local citizens they were found along the crest of the Sierra Nevada north of Mount Whitney (Nelson 1891-27). It was nowhere common in the Sierras south of Mt. Lyell as he learned from his own observations and from both Indian and white residents. Every winter the heavy snows in the mountains drive some of these animals down to the lower edge of the piñons near Lone Pine, at the base of Mount Whitney. Two were killed there by local residents in the early spring of 1891.

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Staff at the Huntington Library in San Marino, California provided copies of some of the plates contained within this document. They are stored in the T. S. (Theodore Sherman) Palmer Collection under collection number PhotCL 416. The plates in this report that came from that collection are: I (Phot CL416(51); III (Phot CL416(8); X (Phot CL416(26); XIII (Phot CL416(33); and XIV (Phot CL 416(49).

Staff at the University of California–Berkeley's Bancroft Library provided copies of all the remaining plates presented in this document. With the exception of the plate involving the kit fox in the Mammal Report, those plates are stored in the C. Hart Merriam pictorial collection under call number BANC PIC 1980.023, Volume/Container Number ALB 13991. The kit fox photograph is stored under call number BANC PIC 1980.023, Volume/Container Number Box 44 (14627–14827).

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PLATES



PLATE I. Going into Camp - Sierras. 1891. 1- Indian Mike. 2 - E. W. Nelson. 3 - Fred Funston. 4 - Tie Sing. Huntington Library.



PLATE II. Death Valley and Panamint Mountains. Looking west from near Bennett Wells. April 9, 1891. Bancroft Library.



PLATE III. Greenland Ranch, Death Valley, California. Near mouth of Furnace Creek. 1891. Huntington Library.



PLATE IV. Greenland Ranch, Death Valley, California. Built by Borax company. Bancroft Library.



PLATE V. Emigrant Cañon, Panamint Mountains, California. Looking north. April 14, 1891. Bancroft Library.



PLATE VI. Panamint squaw, Panamint Valley, California. April 19, 1891. Bancroft Library.



PLATE VII. Clay hills in southwest part of Death Valley, California. April 21, 1891. Looking south. Bancroft Library.



PLATE VIII. Great Bend of Colorado River, between Nevada and Arizona, from the Nevada side. Looking north. May 3, 1891. Muddy Mountains in distance. Bancroft Library.



PLATE IX. Saint George Valley, Utah. Pine Valley Mountain in distance. Looking north from junction of Santa Clara with Virgin River. Mormon Temple in middle. May 14, 1891. Bancroft Library.



PLATE X. The camp at Watkins Ranch, Ash Meadows, Nevada. The residence of the "Duke of Ash Meadows". 1891. Huntington Library



PLATE XI. Shoshone squaw cutting Bailey's hair. March 1891. Ash Meadows, Nevada. Bancroft Library.



PLATE XII. Sarcobatus Flat, Nevada, showing large clay dunes covered with Sarcobatus vermiculatus. June 2, 1891. (Stonewall Mountain, Ralston Desert, on right side of picture.) Bancroft Library.



PLATE XIII. Owens Lake, California looking northwest. High Sierra in background. Huntington Library.

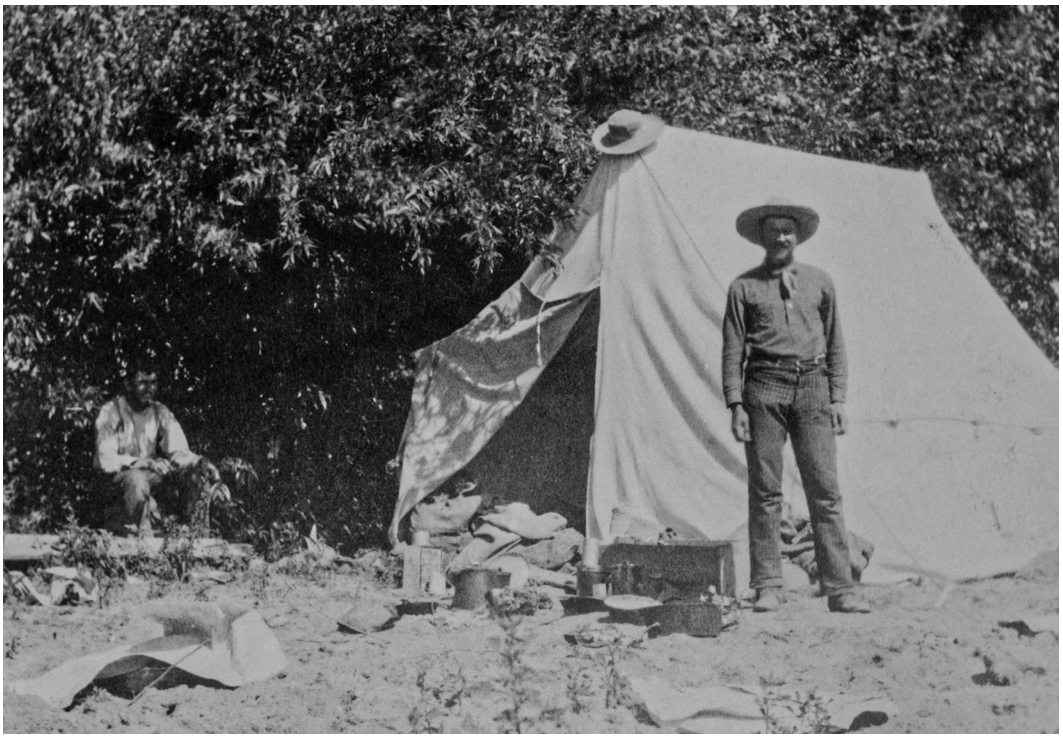


PLATE XIV. Camp at Lone Pine, California. June 1891. Fred W. Koch on the left, Dr. A. K. Fisher on the right. Huntington Library.



PLATE XV. Part of Owens Valley and High Sierra, California. June 11, 1891. Bancroft Library.



PLATE XVI. High Sierra from west side of Owens Valley near Lone Pine. Alabama Range in foreground. Mt. Whitney & Sheep Rock or Mt. Corcoran [= Fisherman's Peak] in main range. June 14, 1891. Bancroft Library.

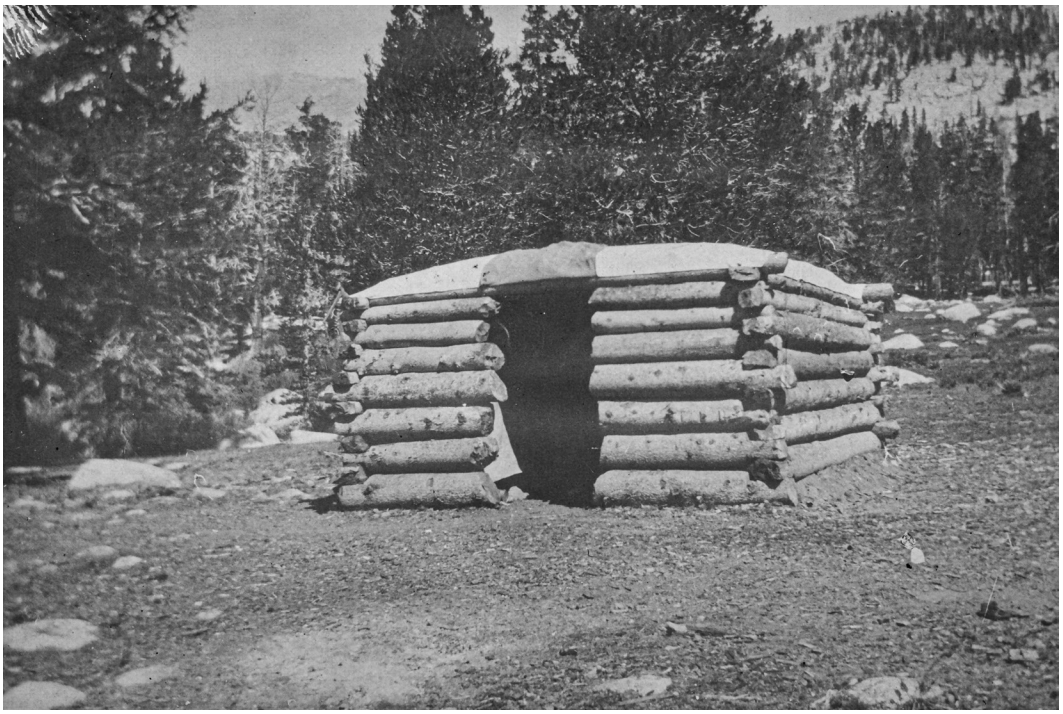


PLATE XVII. Dutcher's Camp in High Sierra, meteorological station in High Sierra, California. Near timberline, south side Mt. Corcoran, altitude 10,000 ft. June 20, 1891 - September 1891. Photograph from the Huntington Library. Caption taken from the same picture at the Bancroft Library.



PLATE XVIII. Tehachapi Pass, California. June 25, 1891. Looking north from summit of pass. Bancroft Library.

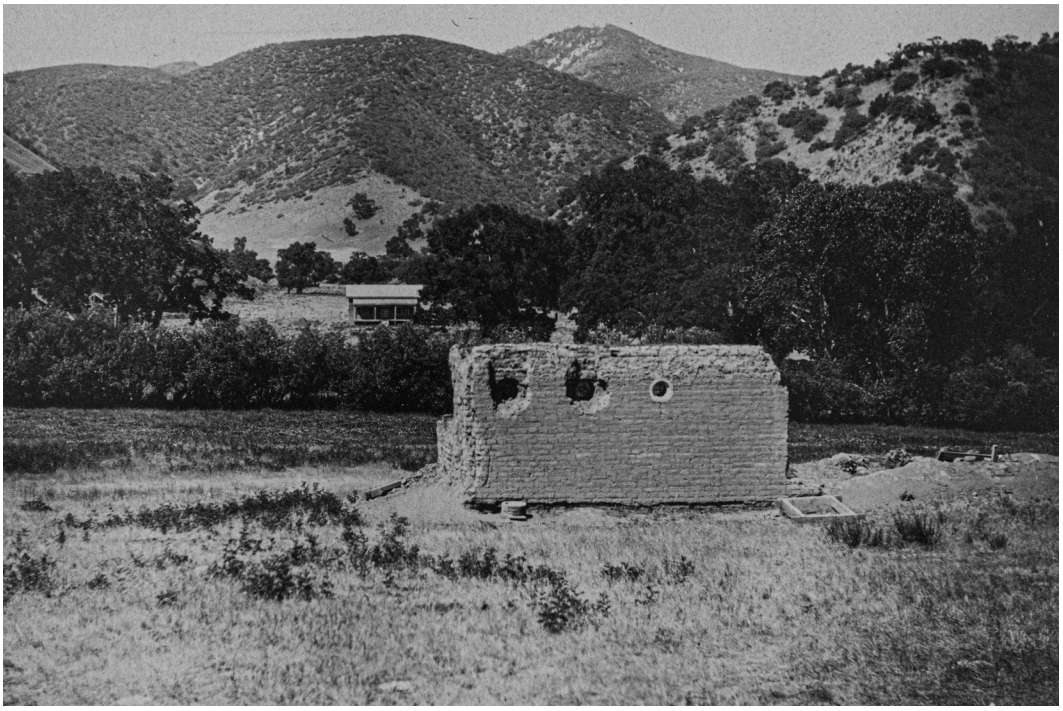


PLATE XIX. Old Fort Tejon, Cañada de las Uvas, California. June 29, 1891. Bancroft Library.

Addresses of authors:

CLINTON HART MERRIAM, M.D.

Deceased

DOUGLAS L. THRELOFF

1298 Antelope Creek Drive
Apt. 322
Roseville, CA 95678
threloffdoug@gmail.com

APPENDICES

Appendices I–V provide group-specific crosswalk tables listing the historical taxonomic names associated with the species and subspecies observed or collected by Death Valley Expedition biologists and their corresponding modern-day taxonomic and common names. They also provide the modern-day class, order, and family names associated with those taxa.

A variety of annotation styles are used to indicate particular traits for those taxa. Modern-day taxon names with a bold font represent type specimens collected during the Expedition. Modern-day common names possessing a dagger superscript (†) indicate a taxon that is now extinct. Death Valley Expedition taxon names followed by a double dagger superscript (‡) indicate a taxon that is solely based on a substantiated or unsubstantiated observation, or reported record type, as described in the Mammal Report above, and not a collected specimen housed in the Smithsonian's National Museum of Natural History. Additional annotation styles for specific taxon groups are described below.

The procedures for creating crosswalk tables for different taxonomic groups, i.e., fish, reptiles and amphibians, birds, and mammals, are provided below.

Fish Collections

Death Valley Expedition biologists did not assign field catalog numbers to the fish specimens they collected. Those fish specimens, their historical taxonomic names, and locations where they were collected are described in Gilbert (1893).

The Smithsonian National Museum of Natural History (NMNH) Division of Fishes Collections website (https://naturalhistory.si.edu/research/vertebrate-zoology/fishes) was queried in December 2025 for fish specimens collected in 1891, and a comma separated value (CSV) file was created with those records. That file was then trimmed to only include the records in Gilbert (1893). Using those data, it was possible to infer which NMNH records correspond to collections identified in Gilbert (1893) and to identify the NMNH taxonomic name for each Death Valley Expedition fish specimen.

The NMNH taxonomic names were then manually cross referenced to the corresponding taxonomic names in the American Fisheries Society's 2023 list of fish taxa in the United States, Canada, and Mexico (AFS 2023).

The American Fisheries Society's 2023 fish list does not provide subspecific epithets. Similarly, the NMNH website also does not provide fish subspecific epithets.

Many of the fish taxa in the California desert have, however, evolved into distinct subspecies. The fish crosswalk tables below provide the modern-day subspecific epithets for some fish taxa collected by the Expedition biologists. The annotation to indicate those modern-day subspecies is as follows: the species-level taxon names provided in the AFS (2023) document, followed by braces i.e., "{ }" surrounding the subspecies epithet and the author describing the subspecies.

For example, the Expedition biologists collected a fish they identified as *Cyprinodon macularius* at a location in the Amargosa River near Saratoga Springs in the southern portion of Death Valley, California. That taxon corresponds to *Cyprinodon nevadensis*, a pupfish taxon described in 1889 by Eigenmann and Eigenmann, and a taxon name in the 2023 AFS fish list. In 1948, Robert Rush Miller described the subspecies of pupfish in the Amargosa River as *Cyprinodon nevadensis amargosae*. In the fish appendix table, the Death Valley Expedition

taxon name for pupfish at that location is listed as *Cyprinodon macularius*, and its modern-day taxon is listed as *Cyprinodon nevadensis* (Eigenmann and Eigenmann 1889) {*amargosae* Miller 1948}.

Reptile and Amphibian Collections

Death Valley Expedition biologists did not assign field catalog numbers to the reptile and amphibian specimens they collected. Those specimens are, however, itemized in Stejneger (1893). That reference provides a historical taxonomic name, collection locality, and "U.S. Nat. Mus. No." number (i.e., Smithsonian National Museum of Natural History catalog number) for each reptile and amphibian specimen collected during the Expedition. The Expedition biologists collected reptile and amphibian specimens in California, Nevada, Arizona, and Utah.

The American Society of Ichthyologists and Herpetologists have developed a reptile and amphibian species list titled *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico* (Nicholson et al. 2025). The Center for North American Herpetology (CNAH) has used that list to provide Internet portals listing those taxa on a state-by-state basis. For example, their portal for reptiles and amphibians in California is available at https://cnah.org/state.aspx?state=California, and the portal for Nevada can be accessed at https://cnah.org/state.aspx?state=Nevada.

The procedure for developing an appendix cross referencing the historical taxonomic names for reptile and amphibian specimens in Stejneger (1893) with the taxonomic names in Nicholson et al. (2025) used the following steps:

1. The NMNH's Division of Amphibians & Reptiles Collections website (https://collections.nmnh.si.edu/search/herps) was queried in 2021 for reptile and amphibian specimens collected in 1891, and a CSV file was created. Those records were then trimmed to Death Valley Expedition records using Expedition biologist's last names and the dates they worked on that endeavor. That CSV was titled NMNH.csv, and it contains the NMNH's catalog specimen number and NMNH taxonomic name for each Expedition specimen.
2. The taxon-specific reptile and amphibian records in Stejneger (1893) were harvested and entered into a draft Microsoft Excel spreadsheet.
3. The data in the draft Stejneger spreadsheet were compared to records in Stejneger (1893), and on an as-needed basis, the records in the spreadsheet were modified to ensure they were complete and accurate. The resulting spreadsheet was deemed to be the Stejneger.xlsx file.
4. State-specific taxon lists from the CNAH Internet portals for the above-mentioned states were downloaded and saved as four state-specific reptile and amphibian Excel files.
5. A Microsoft Access database was developed, and the NMNH.csv, Stejneger.xlsx, and four CNAH Excel files were imported into the database as separate tables.
6. A select query was developed using a database join on the NMNH catalog numbers in the NMNH.csv and Stejneger.xlsx tables. That query created the ability to develop a list of Death Valley Expedition historical taxonomic names and their corresponding NMNH scientific names.
7. Four select queries were developed to integrate the taxonomic names in the NMNH table and four CNAH tables using a database join on the NMNH scientific names and their corresponding scientific names in the CNAH tables.
8. The corresponding taxon names in the Stejneger and CNAH tables were harvested and incorporated into a draft reptile and amphibian appendix.

9. On an as-needed basis when conflicting synonyms in the Stejneger and CNAH tables occurred, reptile and amphibian distribution records in the University of California–Berkeley Museum of Vertebrate Zoology (MVZ) Amphibians & Reptiles Collection website (https://arctos.database.museum/) were examined to evaluate how best to assign corresponding Stejneger and CNAH scientific names.
10. After naming conflicts were resolved, the corresponding Stejneger and CNAH scientific names were harvested and incorporated into the reptile and amphibian appendix.

Bird Collections and Observations

Three Death Valley Expedition biologists, i.e., Albert Fisher, Basil Hicks Dutcher, and Frank Stephens, developed field catalogs recording biologist-specific field numbers and data pertaining to each bird specimen they collected. Other Expedition biologists, i.e., Vernon Bailey, Edward Nelson, Theodore Palmer, and C. Hart Merriam, also collected bird specimens during the Expedition, but they did not assign field catalog numbers to their bird specimens. All of the Expedition biologists observed and recorded the presence of bird taxa at many of the locations they visited; these observations were recorded in their field journals or in the special reports they developed.

All of the bird collections, and many of the bird observations, made during the Death Valley Expedition are listed in Fisher (1893), and that document provides a checklist of all the bird taxa collected or observed during the Expedition. The bird taxonomic names therein include a mixture of taxonomic names at the species and subspecies levels.

The American Ornithological Society (AOS) developed a list of bird taxa occurring in North America (OAS 1998). Using the OAS (1998) document as a foundation, Chesser et al. (2025) provided an updated checklist of North America bird taxa with many taxonomic revisions. That updated checklist is available at https://checklist.americanornithology.org/taxa/ and provides a sequential listing of the modern-day order and family names associated with each bird taxon. The 1998 OAS reference and Chesser et al. (2025) checklist provide bird taxon names only at the species level, and they do not provide subspecific epithets. Therefore, the bird appendix below only includes the corresponding modern-day genus and species names for each Death Valley Expedition taxon, even if the historic name is given at the subspecific level.

Unfortunately, the Chesser et al. (2025) checklist does not provide authority names and dates identifying who and when each bird taxon was described. That information is available, however, on the Integrated Taxonomic Information System website (www.itis.gov) and Avibase website (https://avibase.bsc-eoc.org/avibase.jsp).

The procedure for developing an appendix cross referencing the historical bird taxonomic names in Fisher (1893) and modern-day taxonomic names in Chesser et al. (2025) used the following steps:

1. A Microsoft Access bird database was developed, and a table titled “tbl_DVE_Birds” was created and populated with all of the historical Death Valley Expedition bird taxon names listed in Fisher (1893).
2. The bird checklist developed by Chesser et al. (2025) was imported into the Access bird database and saved as a table titled “tbl_OAS_BirdNames”.
3. A Microsoft Excel file was created and used to store the bird field catalog data recorded by Albert Fisher, Basil Hicks Dutcher, and Frank Stephens. Those three files include a field titled “Biologist-CatNumber” that identified the biologist-specific field catalog number assigned to each bird specimen, and a “DVE_SciName” field identifying the Fisher (1893) bird taxon name assigned to each specimen.

4. The three biologist-specific field catalog number files were imported into the Access bird database as separate tables, e.g., tbl_Fisher bird catalog.
5. The NMNH's Division of Birds Collections website (https://collections.nmnh.si.edu/search/birds) was queried on August 26, 2025 for bird specimens collected in 1891, and a CSV file was created. Those records were then trimmed to Death Valley Expedition records using Expedition biologist last names and the dates they worked on that endeavor. That CSV was titled NMNH.csv, and it contains a "Field Number(s)" field providing the biologist field catalog specimen number for each specimen and a "Current Identification" field providing the NMNH taxonomic name for each specimen.
6. The NMNH.csv file was converted into a Microsoft Excel file, and records in that file were partitioned into three biologist-specific Excel files i.e., one for Albert Fisher, one for Basil Hicks Dutcher, and one for Frank Stephens.
7. The NMNH Albert Fisher, Basil Hicks Dutcher, and Frank Stephens Excel files were imported into the Microsoft Access bird database as separate tables, e.g., tbl_Fisher Smithsonian DVE bird records.
8. A select query was developed in the Access database using a database join on the BiologistCatNumber field in the tbl_Fisher bird catalog table and the Field Number(s) field in the tbl_Fisher Smithsonian DVE bird records table. That query produced a list of Death Valley Expedition historical taxonomic names and their corresponding NMNH scientific names. The results from that query only include bird taxa collected by Fisher. Two additional and similar queries were conducted using the tables storing bird collections made by Basil Hick Dutcher and Frank Stephens.
9. A database select query was constructed to develop a list of bird taxa that were observed, but not collected, during the Expedition. Those observed taxa were the difference between the complete list of bird taxa in the tbl_DVE_Birds table and the three biologist bird catalog tables.
10. The results of the select queries in bullets 8 and 9 were combined into a single database table titled "tbl_DVE_biologist amalgam".
11. A select query was developed in the database using a database join on the NMNH "Current Identification" field in the tbl_DVE_biologist amalgam table and the "species" field in the tbl_OAS_BirdNames table to produce a table titled "tbl_bird appendix". That query created the ability to develop a draft bird appendix with Expedition historical taxonomic names and their corresponding modern-day OAS scientific and common names.
12. In cases where the select query in bullet 11 did not possess a NMNH "Current Identification" entry because a bird taxon was observed, but not collected, during the Expedition, the "Modern-day Taxon" and "Modern-day Common Name" fields in the tbl_bird appendix table was manually populated by entering the Fisher (1893) bird taxon name into the Avibase website and harvesting the applicable modern-day OAS scientific and common names.
13. The ITIS or Avibase websites were queried in February 2026 to harvest the authority name and year of taxonomic description for each OAS bird taxon, and that information was added to the Modern-day Taxon column in the bird appendix.
14. Death Valley Expedition Taxon names in the bird appendix that were only associated with observations were annotated with a double dagger, i.e., "‡". Bird names associated with a collected specimen in the NMNH lack that annotation.

The presentation of taxonomic orders and families in the Bird Appendix adopts the sequence used by the California Bird Records Committee (https://californiabirds.org/checklist.asp), and genus/species/subspecies names are listed in alphabetic order according to the Death Valley Expedition Taxon name.

Mammal Collections, Observations, and Reported Taxa

The Death Valley Expedition biologist's field catalogs indicate 5,659 mammal specimens were collected during that expedition. Of that number, 5,598 (98.9%) are stored at the National Museum of Natural History (NMNH) according to that institution's mammal website (https://collections.nmnh.si.edu/search/mammals/). Of the remaining 61 specimens, approximately 25 are listed in the field catalogs as being spoiled or discarded and therefore were never destined to arrive at the NMNH for curation. Therefore, nearly all of the specimens collected during the Expedition are stored at the NMNH.

The American Society of Mammalogists (ASM) maintains a website (https://www.mammaldiversity.org/) that provides two comma separated value (CSV) files with mammal species and subspecies names for taxa that occur around the Earth. That organization's nomenclature is commonly considered to be the authority for mammal names in the United States. Those files are part of the Mammal Diversity Database (MDD). A MDD_v2.4_6836species.csv file provides common and modern-day taxonomic names and nomenclature data for species, and a Species_Syn_v2.4.csv provides modern-day taxonomic names for subspecies. Unfortunately, the latter file does not provide common names for taxa at the subspecies level. Both files identify the individual or individuals (authority/authorities) and year each taxon was formally recognized, and they provide the published reference citation establishing the creation of each taxon.

The development of an appendix cross referencing historical mammal taxonomic names, i.e., Death Valley Expedition taxon names, to the modern-day taxonomic names in the ASM's MDD used the following procedure:

1. In January 2023, a series of queries were conducted on the NMNH mammal website to harvest mammal specimen data pertaining to the Expedition. The results of those queries were incorporated into a single Excel file titled "Smithsonian master mammal.xlsx". That file identifies the Expedition biologists that collected mammal specimens, and provides the biologist-specific field catalog number assigned to a specimen, the location where each specimen was collected, and a "Current Identification" taxon name assigned to a specimen by a Smithsonian employee.
2. A Microsoft Access Mammal Crosswalk database was developed. The following Excel files were imported into that database and converted to tables: (1) the Smithsonian master mammals.xlsx file, and (2) the DVE "master mammal.xlsx" file containing the mammal specimen data used to produce the above-mentioned Mammal Report.
3. A "DVE to Smithsonian" make table query was developed in the Mammal Crosswalk database and used to cross reference biologist names and their field catalog numbers in the DVE master mammal table to their corresponding fields in the Smithsonian master mammal table. That query's results were used to produce a table listing the historical Death Valley Expedition taxon names and their corresponding 2023 Smithsonian taxon names for each mammal specimen collected during the Expedition. As such, the Smithsonian taxon name can be used as a bridge to correlate historical Death Valley Expedition taxon names with their corresponding modern-day ASM taxon names using step 4 below.
4. Copies of the ASM CSV files for species and subspecies were downloaded from the ASM website on January 9, 2026. The subspecies file was then trimmed to only include subspecies with a MDD_nomenclature_status field equal to "available" or "nomen_novum". ASM valid taxa are limited to taxa with those classifications (Jelle Zijlstra, Mammal Diversity Database project, pers. comm, February 9, 2026).
5. The Smithsonian taxon names from the DVE to Smithsonian make table query were manually compared to taxon names in the ASM Species_Syn_v2.4.csv subspecies file. In cases where the historical Death Valley Expedition taxon name, Smithsonian taxon name, and a ASM mammal subspecies name

were all identical, it was inferred the Death Valley Expedition taxon name corresponded to the ASM modern-day taxon name, and that pair of names was added to the list of taxa in the Mammal Appendix.

6. In cases where a Smithsonian taxon name did not exactly match a ASM mammal subspecies name, research was conducted using a variety of references to determine which ASM subspecific epithet was most likely synonymous with a Smithsonian taxon name. In most of those cases, an Expedition specimen's taxonomic name and where it was collected was compared to taxon locations / geographic distribution boundaries in various references to establish which ASM modern-day taxon name corresponded to a Smithsonian taxon name. Examples of such references include the Hall (1981) *Mammals of North America* book, or recommended taxonomic revisions pertaining to *Peromyscus* taxa (Bradley et al. 2019). As Smithsonian–ASM synonyms were identified, the corresponding historical Death Valley Expedition taxon name and ASM modern-day taxon name were added to the Mammal Appendix, along with the ASM common names and taxon's authority name and year.

The presentation of taxonomic orders and families in the Mammal Appendix adopts the sequence of presentation in Wilson and Reeder (2005), and genus/species/subspecies names are listed in alphabetic order according to the Death Valley Expedition Taxon name.

Because the ASM Species_Syn_v2.4.csv file does not provide common names for subspecies, the modern-day common names in the Mammal Appendix are provided at the specific epithet level.

In cases where a subspecific epithet could not confidently be assigned to a ASM modern-day species, the ASM modern-day taxon name is only provided at the species, not subspecies, level. For example, some specimens associated with the *Thomomys perpallidus perpes* Death Valley Expedition taxon name were assigned to a ASM specific epithet of *Megascapheus fulvus*, and no subspecific epithet is provided.

The aforementioned annotation symbols were added to the Mammal Appendix to indicate: (1) taxa that are based on type specimens collected during the Death Valley Expedition, (2) taxon names that were not based on collected specimens (i.e., they are solely based on Expedition biologist observations or local citizen reports), and (3) extinct taxa.

It is important to note most of the historical North American Fauna publications contain a few Death Valley Expedition taxon names without duplicate specific and subspecific epithets. For example, Osgood's *Revision of the Pocket Mice of the Genus Perognathus* published in 1900 does not explicitly identify a *Perognathus panamintinus panamintinus* taxon. Instead, he only identifies a *Perognathus panamintinus* taxon, and two associated subspecies, i.e., *bangsi* and *brevinasus*. It is not known if he meant to imply his *Perognathus panamintinus* records were associated with *Perognathus panamintinus panamintinus*. Or if he was uncertain on how to assign some specimens to a subspecies, and he instead chose to assign some specimens to a more generic *Perognathus panamintinus* taxon. As the Mammal Appendix was created, a conservative approach was therefore adopted, and some Death Valley Expedition Taxon names therefore lack a subspecific epithet.

Readers will note historical Death Valley Expedition taxon names markedly differ from ASM modern-day taxon names in a few mammal groups, e.g., bats and gophers. This is partially due to recent genetic studies or higher-level nomenclature revisions, or some uncertainty on a taxon assignment by an Expedition biologist or Smithsonian staff member.

During the Expedition, type specimens for 29 new mammal taxa were collected. Table 2 below lists the historical Death Valley Expedition taxon name, NMNH current identification name, ASM modern-day taxon name, and NMNH catalog number associated with each of those type specimens stored at the NMNH.

Table 2. Mammal type specimens collected during the Death Valley Expedition.

Death Valley Expedition Taxon	NMNH Current Identification	NMNH Catalog Number	ASM Modern-day Taxon
Canis latrans lestes	*Canis latrans lestes*	24552	*Canis latrans lestes*
Citellus beecheyi fisheri	*Otospermophilus beecheyi fisheri*	29318	*Otospermophilus beecheyi fisheri*
Dipodomys agilis perplexus	*Dipodomys agilis perplexus*	29261	*Dipodomys agilis perplexus*
Dipodomys levipes	*Dipodomys microps levipes*	27176	*Dipodomys microps levipes*
Dipodomys morroensis	*Dipodomys heermanni morroensis*	31626	*Dipodomys heermanni morroensis*
Dipodomys nitratoides exilis	*Dipodomys nitratoides exilis*	34843	*Dipodomys nitratoides exilis*
Eutamias alpinus	*Tamias alpinus*	30507	*Neotamias alpinus alpinus*
Eutamias palmeri	*Tamias palmeri*	26075	*Neotamias palmeri palmeri*
Eutamias quadrivittatus sequoiensis	*Tamias speciosus sequoiensis*	30899	*Neotamias speciosus sequoiensis*
Marmota flaviventris sierrae	*Marmota flaviventris flaviventris*	30984	*Marmota flaviventris sierrae*
Microtus californicus vallicola	*Microtus californicus vallicola*	25393	*Microtus californicus vallicola*
Microtus dutcheri	*Microtus montanus dutcheri*	29769	*Microtus montanus dutcheri*
Microtus nevadensis	*Microtus montanus nevadensis*	26877	*Microtus montanus nevadensis*
Microtus scirpensis	*Microtus californicus scirpensis*	25979	*Microtus californicus scirpensis*
Neotoma fuscipes simplex	*Neotoma macrotis simplex*	25391	*Neotoma fuscipes simplex*
Neotoma intermedia gilva	*Neotoma bryanti intermedia*	31516	*Neotoma bryanti intermedia*
Onychomys torridus clarus	*Onychomys torridus clarus*	25453	*Onychomys torridus clarus*
Ovis canadensis nelsoni	*Ovis canadensis nelsoni*	28383	*Ovis canadensis nelsoni*
Perognathus californicus dispar	*Chaetodipus californicus dispar*	32116	*Chaetodipus californicus dispar*
Perognathus panamintinus	*Perognathus longimembris panamintinus*	27767	*Perognathus longimembris panamintinus*

Death Valley Expedition Taxon	NMNH Current Identification	NMNH Catalog Number	ASM Modern-day Taxon
Perognathus parvus magruderensis	*Perognathus parvus olivaceus*	28427	*Perognathus mollipilosus magruderensis*
Perognathus penicillatus	*Chaetodipus penicillatus sobrinus*	27598	*Chaetodipus penicillatus sobrinus*
Perognathus stephensi	*Chaetodipus penicillatus stephensi*	27774	*Chaetodipus penicillatus stephensi*
Sorex ornatus ornatus	*Sorex ornatus ornatus*	31333	*Sorex ornatus ornatus*
Sorex tenellus	*Sorex tenellus*	25083	*Sorex tenellus tenellus*
Sorex trowbridgii montereyensis	*Sorex trowbridgii montereyensis*	32000	*Sorex trowbridgii montereyensis*
Sylvilagus auduboni vallicola	*Sylvilagus audubonii audubonii*	31257	*Sylvilagus audubonii vallicola*
Thomomys alpinus alpinus	*Thomomys bottae alpinus*	30528	*Megascapheus fulvus alpinus*
Thomomys townsendi nevadensis	*Thomomys townsendii nevadensis*	25001	*Megascapheus townsendii nevadensis*

APPENDIX I
FISH TAXA COLLECTED DURING THE DEATH VALLEY EXPEDITION

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Cypriniformes			
Family Catostomidae			
	Catostomus araeopus	*Pantosteus lahontan* (Rutter, 1903)	Lahontan Sucker
Family Cyprinidae			
	Cyprinus carpio	*Cyprinus carpio* (Linnaeus, 1758)	Common Carp
Family Leuciscidae			
	Lepidomeda vittata	*Lepidomeda altivelis* (Hubbs and Miller, 1960)	Pahranagat Spinedace†
	Rhinichthys nevadensis	*Rhinichthys deaconi* (Miller, 1984)	Las Vegas Dace†
	Rhinichthys nevadensis	*Rhinichthys osculus* (Girard, 1856) {***nevadensis*** Gilbert, 1893}	Ash Meadows Speckled Dace
	Rhinichthys nevadensis	*Rhinichthys* osculus (Girard, 1856) {robustus Rutter, 1903}	Lahontan Speckled Dace
	Rhinichthys velifer	*Rhinichthys osculus* (Girard 1856) {***velifer*** Gilbert, 1893}	White River Speckled Dace
	Rutilus symmetricus	*Siphateles bicolor* (Girard, 1856) {*snyderi* Miller, 1973}	Owens Tui Chub
Order Siluriformes			
Family Heptapteridae			
	Ameiurus nebulosus	*Ameiurus nebulosus* (Lesueur, 1819)	Brown Bullhead
Order Salmoniformes			
Family Salmonidae			
	Salmo mykiss agua-bonita	*Oncorhynchus aguabonita* (Jordan, 1892)	Golden Trout
	Salmo irideus	*Oncorhynchus mykiss* (Walbaum, 1792)	Rainbow Trout

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Cyprinodontiformes			
Family Cyprinodontidae			
	Cyprinodon macularius	*Cyprinodon diabolis* (Wales, 1930)	Devils Hole Pupfish
	Cyprinodon macularius	*Cyprinodon nevadensis* (Eigenmann and Eigenmann, 1889) {*amargosae* Miller, 1948}	Amargosa River Pupfish
	Cyprinodon macularius	*Cyprinodon nevadensis* (Eigenmann and Eigenmann, 1889) {*mionectes* Miller, 1948}	Ash Meadows Pupfish
	Cyprinodon macularius	*Cyprinodon nevadensis nevadensis* (Eigenmann and Eigenmann, 1889)	Amargosa Pupfish
	Cyprinodon macularius	*Cyprinodon nevadensis* (Eigenmann and Eigenmann, 1889) {*shoshone* Miller, 1948}	Shoshone Pupfish
Family Goodeidae			
	Cyprinodon macularius baileyi	***Crenichthys baileyi*** (Gilbert, 1893)	White River Springfish
	Empetrichthys merriami	*Empetrichthys latos* (Miller, 1948)	Pahrump Poolfish
	Empetrichthys merriami	***Empetrichthys merriami*** Gilbert, 1893	Ash Meadows Poolfish†
Order Perciformes			
Family Gasterosteidae			
	Gasterosteus williamsoni	*Gasterosteus aculeatus* (Linnaeus, 1758)	Threespine Stickleback

APPENDIX II
AMPHIBIAN TAXA COLLECTED OR OBSERVED DURING THE DEATH VALLEY EXPEDITION

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Anura			
Family Bufonidae			
	Bufo halophilus	*Anaxyrus boreas* (Baird and Girard, 1852)	Western Toad
	Bufo lentiginosus woodhousii	*Anaxyrus microscaphus* (Cope, 1866)	Arizona Toad
	Bufo boreas nelsoni	***Anaxyrus nelsoni*** (Stejneger, 1893)	Amargosa Toad
	Bufo punctatus	*Anaxyrus punctatus* (Baird and Girard, 1852)	Red-spotted Toad
Family Hylidae			
	Hyla regilla	*Pseudacris regilla* (Baird and Girard, 1852)	Pacific Treefrog
Family Ranidae			
	Rana fisheri	***Lithobates fisheri*** (Stejneger, 1893)	Vegas Valley Leopard Frog†
	Rana pipiens brachycephala	*Lithobates pipiens* (Schreber, 1782)	Northern Leopard Frog
	Rana boylii	*Rana boylii* Baird, 1854	Foothill Yellow-legged Frog
	Rana draytonii	*Rana draytonii* Baird and Girard, 1852	California Red-legged Frog
	Bufo halophilus	*Rana muscosa* Camp, 1917	Southern Mountain Yellow-legged Frog
	Rana aurora	*Rana muscosa* Camp, 1917	Southern Mountain Yellow-legged Frog
	Rana pretiosa	*Rana muscosa* Camp, 1917	Southern Mountain Yellow-legged Frog
Family Scaphiopodidae			
	Scaphiopus hammondii	*Spea intermontana* (Cope, 1883)	Great Basin Spadefoot

APPENDIX III
REPTILE TAXA COLLECTED OR OBSERVED DURING THE DEATH VALLEY EXPEDITION

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Squamata			
Family Anguidae			
	Gerrhonotus burnettii	*Elgaria coerulea* (Wiegmann, 1828)	Northern Alligator Lizard
	Gerrhonotus scincicauda palmeri	***Elgaria coerulea palmeri*** (Stejneger, 1893)	Southern Sierra Alligator Lizard
	Gerrhonotus scincicauda	*Elgaria multicarinata* (Blainville, 1835)	Southern Alligator Lizard
Family Crotaphytidae			
	Crotaphytus baileyi	*Crotaphytus bicinctores* Smith and Tanner, 1972	Great Basin Collared Lizard
	Crotaphytus silus	*Gambelia sila* (Stejneger, 1890)	Blunt-nosed Leopard Lizard
	Crotaphytus wislizenii	*Gambelia wislizenii* (Baird and Girard, 1852)	Long-nosed Leopard Lizard
Family Eublepharidae			
	Coleonyx brevis	*Coleonyx variegatus* (Baird, 1859 "1858")	Western Banded Gecko
Family Helodermatidae			
	Heloderma suspectum	*Heloderma suspectum* Cope, 1869	Gila Monster
Family Iguanidae			
	Dipsosaurus dorsalis	*Dipsosaurus dorsalis* (Baird and Girard, 1852)	Desert Iguana
	Sauromalus ater	*Sauromalus ater* Duméril, 1856	Common Chuckwalla
Family Phrynosomatidae			
	Callisaurus ventralis	*Callisaurus draconoides* Blainville, 1835	Zebra-tailed Lizard
	Phrynosoma blainvillii	*Phrynosoma blainvillii* Gray, 1839	Coast Horned Lizard
	Phrynosoma platyrhinos	*Phrynosoma platyrhinos* Girard in Barid and Girard, 1852	Desert Horned Lizard

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Sceloporus graciosus	*Sceloporus graciosus* Baird and Girard, 1852	Common Sagebrush Lizard
	Sceloporus magister	*Sceloporus magister* Hallowell, 1854	Desert Spiny Lizard
	Sceloporus biseriatus	*Sceloporus occidentalis* Baird and Girard, 1852	Western Fence Lizard
	Sceloporus occidentalis	*Sceloporus occidentalis* Baird and Girard, 1852	Western Fence Lizard
	Uta graciosa	*Urosaurus graciosus* Hallowell, 1854	Long-tailed Brush Lizard
	Uta stansburiana	*Uta stansburiana* Baird and Girard, 1852	Common Side-blotched Lizard
Family Scincidae			
	Eumeces skiltonianus	*Plestiodon gilberti* (Van Denburgh, 1896)	Gilbert's Skink
Family Teiidae			
	Cnemidophorus tigris	*Aspidoscelis tigris* (Baird and Girard, 1852)	Tiger Whiptail
	Cnemidophorus tigris undulatus	*Aspidoscelis tigris* (Baird and Girard, 1852)	Tiger Whiptail
Family Xantusiidae			
	Xantusia vigilis	*Xantusia vigilis* Baird, 1859	Desert Night Lizard
Family Boidae			
	Charina plumbea	*Charina bottae* (Blainville, 1835)	Rubber Boa
Family Colubridae			
	Lampropeltis boylii	*Lampropeltis californiae* (Blainville, 1835)	California Kingsnake
	Bascanion flagellum frenatum	*Masticophis flagellum* (Shaw, 1802)	Common Coachwhip
	Bascanion laterale	*Masticophis lateralis* (Hallowell, 1853)	Striped Racer
	Bascanion taeniatum	*Masticophis taeniatus* (Hallowell, 1852)	Striped Whipsnake
	Pituophis catenifer	*Pituophis catenifer* (Blainville, 1835)	Gophersnake
	Pituophis catenifer deserticola	***Pituophis catenifer deserticola*** Stejneger, 1893	Great Basin Gophersnake

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Salvadora grahamiae hexalepis	*Salvadora hexalepis* (Cope, 1866)	Western Patch-nosed Snake
Family Crotalidae			
	Crotalus cerastes	*Crotalus cerastes* Hallowell, 1854	Sidewinder
	Crotalus tigris	*Crotalus stephensi* Klauber, 1930	Panamint Rattlesnake
	Crotalus lucifer	*Crotalus viridis* (Rafinesque, 1818)	Prairie Rattlesnake
Family Dipsadidae			
	Diadophis pulchellus	*Diadophis punctatus* (Linnaeus, 1766)	Ring-necked Snake
	Hypsiglena ochrorhynchus	*Hypsiglena chlorophaea* Cope, 1860	Desert Nightsnake
Family Leptotyphlopidae			
	Rena humilis	*Rena humilis* Baird and Girard, 1853	Western Threadsnake
Family Natricidae			
	Thamnophis hammondii	*Thamnophis couchii* (Kennicott, 1859)	Sierra Gartersnake
	Thamnophis elegans	*Thamnophis elegans* (Baird and Girard, 1853)	Terrestrial Gartersnake
	Thamnophis infernalis	*Thamnophis elegans* (Baird and Girard, 1853)	Terrestrial Gartersnake
	Thamnophis parietalis	*Thamnophis elegans* (Baird and Girard, 1853)	Terrestrial Gartersnake
	Thamnophis vagrans	*Thamnophis elegans* (Baird and Girard, 1853)	Terrestrial Gartersnake
	Thamnophis elegans	*Thamnophis sirtalis* (Linnaeus, 1758)	Common Gartersnake
Order Testudines			
Family Emydidae			
	Clemmys marmorata	*Actinemys marmorata* (Baird and Girard, 1852)	Northwestern Pond Turtle
Family Testudinidae			
	Gopherus agassizii	*Gopherus agassizii* (Cooper, 1861)	Mojave Desert Tortoise

APPENDIX IV
BIRD TAXA COLLECTED OR OBSERVED DURING THE DEATH VALLEY EXPEDITION

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Anseriformes			
Family Anatidae			
	Anas americana‡	*Mareca americana* (J. F. Gmelin, 1789)	American Wigeon
	Anas boschas	*Anas platyrhynchos* Linnaeus, 1758	Mallard
	Anas carolinensis‡	*Anas crecca* Linnaeus, 1758	Green-winged Teal
	Anas cyanoptera	*Spatula cyanoptera* (Vieillot, 1816)	Cinnamon Teal
	Anas discors	*Spatula discors* (Linnaeus, 1766)	Blue-winged Teal
	Anas strepera‡	*Mareca strepera* (Linnaeus, 1758)	Gadwall
	Anser albifrons gambeli‡	*Anser albifrons* (Scopoli, 1769)	Greater White-fronted Goose
	Aythya americana‡	*Aythya americana* (Eyton, 1838)	Redhead
	Aythya collaris‡	*Aythya collaris* (Donovan, 1809)	Ring-necked Duck
	Aythya vallisneria‡	*Aythya valisineria* (A. Wilson, 1814)	Canvasback
	Branta canadensis hutchinsii‡	*Branta canadensis* (Linnaeus, 1758)	Canada Goose
	Branta canadensis occidentalis‡	*Branta canadensis* (Linnaeus, 1758)	Canada Goose
	Charitonetta albeola‡	*Bucephala albeola* (Linnaeus, 1758)	Bufflehead
	Chen hyperborea‡	*Anser caerulescens* (Linnaeus, 1758)	Snow Goose
	Dafila acuta‡	*Anas acuta* Linnaeus, 1758	Northern Pintail
	Dendrocygna fulva	*Dendrocygna bicolor* (Vieillot, 1816)	Fulvous Whistling-duck
	Erismatura rubida‡	*Oxyura jamaicensis* (J. F. Gmelin, 1789)	Ruddy Duck
	Glaucionetta clangula americana‡	*Bucephala clangula* (Linnaeus, 1758)	Common Goldeneye

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Histrionicus histrionicus‡	*Histrionicus histrionicus* (Linnaeus, 1758)	Harlequin Duck
	Merganser americanus	*Mergus merganser* Linnaeus, 1758	Common Merganser
	Merganser serrator‡	*Mergus serrator* Linnaeus, 1758	Red-breasted Merganser
	Oidemia americana‡	*Melanitta americana* (Swainson, 1832)	Black Scoter
	Oidemia perspicillata‡	*Melanitta perspicillata* (Linnaeus, 1758)	Surf Scoter
	Spatula clypeata‡	*Spatula clypeata* (Linnaeus, 1758)	Northern Shoveler
Order Galliformes			
Family Odontophoridae			
	Callipepla californica‡	*Callipepla californica* (Shaw, 1798)	California Quail
	Callipepla californica vallicola	*Callipepla californica* (Shaw, 1798)	California Quail
	Callipepla gambeli	*Callipepla gambelii* (Gambel, 1843)	Gambel's Quail
	Oreortyx pictus plumiferus	*Oreortyx pictus* (Douglas, 1829)	Mountain Quail
Family Phasianidae			
	Centrocercus urophasianus‡	*Centrocercus urophasianus* (Bonaparte, 1827)	Greater Sage-grouse
	Dendragapus obscurus faliginosus	*Dendragapus fuliginosus* (Ridgway, 1873)	Sooty Grouse
Order Podicipediformes			
Family Podicipedidae			
	Aechmophorus occidentalis‡	*Aechmophorus occidentalis* (Lawrence, 1858)	Western Grebe
	Colymbus nigricollis californicus	*Podiceps nigricollis* C. L. Brehm, 1831	Eared Grebe
	Podilymbus podiceps‡	*Podilymbus podiceps* (Linnaeus, 1758)	Pied-billed Grebe

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Columbiformes			
Family Columbidae			
	Columba fasciata‡	*Patagioenas fasciata* (Say, 1822)	Band-tailed Pigeon
	Zenaidura macroura	*Zenaida macroura* (Linnaeus, 1758)	Mourning Dove
Order Cuculiformes			
Family Cuculidae			
	Coccyzus americanus occidentalis	*Coccyzus americanus* (Linnaeus, 1758)	Yellow-billed Cuckoo
	Geococcyx californianus	*Geococcyx californianus* (R. Lesson, 1829)	Greater Roadrunner
Order Caprimulgiformes			
Family Caprimulgidae			
	Chordeiles texensis	*Chordeiles acutipennis* (Hermann, 1783)	Lesser Nighthawk
	Chordeiles virginianus henryi	*Chordeiles minor* (J. R. Forster, 1771)	Common Nighthawk
	Phalaenoptilus nuttalli	*Phalaenoptilus nuttallii* (Audubon, 1844)	Common Poorwill
	Phalaenoptilus nuttalli californicus	*Phalaenoptilus nuttallii* (Audubon, 1844)	Common Poorwill
Order Apodiformes			
Family Apodidae			
	Aeronautes melanoleucus	*Aeronautes saxatalis* (Woodhouse, 1853)	White-throated Swift
	Chaetura vauxii	*Chaetura vauxi* (J. K. Townsend, 1839)	Vaux's Swift
	Cypseloides niger	*Cypseloides niger* (J. F. Gmelin, 1789)	Black Swift
Family Trochilidae			
	Calypte anna	*Calypte anna* (R. Lesson, 1829)	Anna's Hummingbird
	Calypte costae	*Calypte costae* (Bourcier, 1839)	Costa's Hummingbird

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Selasphorus platycercus	*Selasphorus platycercus* (Swainson, 1827)	Broad-tailed Hummingbird
	Selasphorus rufus	*Selasphorus rufus* (J. F. Gmelin, 1788)	Rufous Hummingbird
	Stellula calliope‡	*Selasphorus calliope* (Gould, 1847)	Calliope Hummingbird
	Trochilus alexandri	*Archilochus alexandri* (Bourcier & Mulsant, 1846)	Black-chinned Hummingbird
Order Gruiformes			
Family Gruidae			
	Grus canadensis	*Antigone canadensis* (Linnaeus, 1758)	Sandhill Crane
Family Rallidae			
	Fulica americana‡	*Fulica americana* J. F. Gmelin, 1789	American Coot
	Porzana carolina‡	*Porzana carolina* (Linnaeus, 1758)	Sora
	Rallus virginianus	*Rallus limicola* Vieillot, 1819	Virginia Rail
Order Charadriiformes			
Family Recurvirostridae			
	Himantopus mexicanus‡	*Himantopus mexicanus* (P. L. S. Müller, 1776)	Black-necked Stilt
	Recurvirostra americana‡	*Recurvirostra americana* J. F. Gmelin, 1789	American Avocet
Family Charadriidae			
	Aegialitis montana‡	*Anarhynchus montanus* Townsend, 1837	Mountain Plover
	Aegialitis nivosa	*Anarhynchus nivosus* (Cassin, 1858)	Snowy Plover
	Aegialitis vocifera	*Charadrius vociferus* Linnaeus, 1758	Killdeer
	Charadrius squatarola	*Pluvialis squatarola* (Linnaeus, 1758)	Black-bellied Plover
Family Scolopacidae			
	Actitis macularia‡	*Actitis macularius* (Linnaeus, 1766)	Spotted Sandpiper

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Calidris arenaria	*Calidris alba* (Pallas, 1764)	Sanderling
	Ereunetes occidentalis	*Calidris mauri* (Cabanis, 1857)	Western Sandpiper
	Gallinago delicata‡	*Gallinago delicata* (Ord, 1825)	Wilson's Snipe
	Heteractitis incanus	*Tringa incana* (J. F. Gmelin, 1789)	Wandering Tattler
	Limosa fedoa‡	*Limosa fedoa* (Linnaeus, 1758)	Marbled Godwit
	Numenius hudsonicus‡	*Numenius phaeopus* (Linnaeus, 1758)	Whimbrel
	Numenius longirostris‡	*Numenius americanus* Bechstein, 1812	Long-billed Curlew
	Phalaropus tricolor	*Phalaropus tricolor* (Vieillot, 1819)	Wilson's Phalarope
	Symphemia semipalmata inornata‡	*Tringa semipalmata* (J. F. Gmelin, 1789)	Willet
	Totanus melanoleucus‡	*Tringa melanoleuca* (J. F. Gmelin, 1789)	Greater Yellowlegs
	Tringa minutilla‡	*Calidris minutilla* (Vieillot, 1819)	Least Sandpiper
Family Alcidae			
	Uria troile californica	*Uria aalge* (Pontoppidan, 1763)	Common Murre
Family Laridae			
	Larus californicus‡	*Larus californicus* Lawrence, 1854	California Gull
	Larus delawarensis‡	*Larus delawarensis* Ord, 1815	Ring-billed Gull
	Larus glaucescens‡	*Larus hyperboreus* Gunnerus, 1767	Glaucous Gull
	Larus heermanni‡	*Larus heermanni* Cassin, 1852	Heermann's Gull
	Larus philadelphia‡	*Chroicocephalus philadelphia* (Ord, 1815)	Bonaparte's Gull
	Sterna maxima‡	*Thalasseus maximus* (Boddaert, 1783)	Royal Tern
Order Gaviiformes			
Family Gaviidae			
	Urinator imber‡	*Gavia immer* (Brünnich, 1764)	Common Loon

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Urinator lumme‡	*Gavia stellata* (Pontoppidan, 1763)	Red-throated Loon
	Urinator pacificus‡	*Gavia pacifica* (Lawrence, 1858)	Pacific Loon
Order Suliformes			
Family Phalacrocoracidae			
	Phalacrocorax dilophus albociliatus‡	*Nannopterum auritum* (R. P. Lesson, 1831)	Double-crested Cormorant
	Phalacrocorax pelagicus resplendens‡	*Urile pelagicus* (Pallas, 1811)	Pelagic Cormorant
	Phalacrocorax penicillatus‡	*Urile penicillatus* (J. F. Brandt, 1837)	Brandt's Cormorant
Order Pelecaniformes			
Family Threskiornithidae			
	Plegadis guarauna‡	*Plegadis chihi* (Vieillot, 1817)	White-faced Ibis
Family Pelecanidae			
	Pelecanus californicus‡	*Pelecanus occidentalis* Linnaeus, 1766	Brown Pelican
	Pelecanus erythrorhynchos‡	*Pelecanus erythrorhynchos* J. F. Gmelin, 1789	American White Pelican
Family Ardeidae			
	Ardea egretta‡	*Ardea alba* Linnaeus, 1758	Great Egret
	Ardea herodias‡	*Ardea herodias* Linnaeus, 1758	Great Blue Heron
	Ardea virescens‡	*Butorides virescens* (Linnaeus, 1758)	Green Heron
	Botaurus lentiginosus‡	*Botaurus lentiginosus* (Rackett, 1813)	American Bittern
	Nycticorax nycticorax naevius‡	*Nycticorax nycticorax* (Linnaeus, 1758)	Black-crowned Night Heron
Order Cathartiformes			
Family Cathartidae			
	Cathartes aura‡	*Cathartes aura* (Linnaeus, 1758)	Turkey Vulture
	Pseudogryphus californianus‡	*Gymnogyps californianus* (Shaw, 1797)	California Condor

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Accipitriformes			
Family Pandionidae			
	Pandion haliaetus carolinensis‡	*Pandion haliaetus* (Linnaeus, 1758)	Osprey
Family Accipitridae			
	Accipiter atricapillus striatulus‡	*Astur atricapillus* (A. Wilson, 1812)	American Goshawk
	Accipiter cooperi‡	*Astur cooperii* (Bonaparte, 1828)	Cooper's Hawk
	Accipiter velox	*Accipiter striatus* Vieillot, 1808	Sharp-shinned Hawk
	Aquila chrysaetos‡	*Aquila chrysaetos* (Linnaeus, 1758)	Golden Eagle
	Archibuteo ferrugineus	*Buteo regalis* (G. R. Gray, 1844)	Ferruginous Hawk
	Buteo borealis calurus	*Buteo jamaicensis* (J. F. Gmelin, 1788)	Red-tailed Hawk
	Buteo lineatus elegans‡	*Buteo lineatus* (J. F. Gmelin, 1788)	Red-shouldered Hawk
	Buteo swainsoni	*Buteo swainsoni* Bonaparte, 1838	Swainson's Hawk
	Circus hudsonius	*Circus hudsonius* (Linnaeus, 1766)	Northern Harrier
	Elanus leucurus‡	*Elanus leucurus* (Vieillot, 1818)	White-tailed Kite
	Haliaeetus leucocephalus‡	*Haliaeetus leucocephalus* (Linnaeus, 1766)	Bald Eagle
Order Strigiformes			
Family Tytonidae			
	Strix pratincola	*Tyto furcata* (Temminck, 1827)	American Barn Owl
Family Strigidae			
	Asio accipitrinus‡	*Asio flammeus* (Pontoppidan, 1763)	Short-eared Owl
	Asio wilsonianus‡	*Asio otus* (Linnaeus, 1758)	Long-eared Owl
	Bubo virginianus subarcticus	*Bubo virginianus* (J. F. Gmelin, 1788)	Great Horned Owl

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Megascops asio bendirei	*Megascops kennicottii* (D. G. Elliot, 1867)	Western Screech-owl
	Speotyto cunicularia hypogaea	*Athene cunicularia* (Molina, 1782)	Burrowing Owl
	Syrnium occidentale‡	*Strix occidentalis* (J. Xántus, 1860)	Spotted Owl
Order Coraciiformes			
Family Alcedinidae			
	Ceryle alcyon‡	*Megaceryle alcyon* (Linnaeus, 1758)	Belted Kingfisher
Order Piciformes			
Family Picidae			
	Ceophloeus pileatus‡	*Dryocopus pileatus* (Linnaeus, 1758)	Pileated Woodpecker
	Colaptes cafer	*Colaptes auratus* (Linnaeus, 1758)	Northern Flicker
	Dryobates nuttallii	*Dryobates nuttallii* (Gambel, 1843)	Nuttall's Woodpecker
	Dryobates pubescens gairdnerii‡	*Dryobates pubescens* (Linnaeus, 1766)	Downy Woodpecker
	Dryobates scalaris bairdi	*Dryobates scalaris* (Wagler, 1829)	Ladder-backed Woodpecker
	Dryobates villosus hyloscopus	*Dryobates villosus* (Linnaeus, 1766)	Hairy Woodpecker
	Melanerpes formicivorus bairdi	*Melanerpes formicivorus* (Swainson, 1827)	Acorn Woodpecker
	Melanerpes torquatus	*Melanerpes lewis* (G. R. Gray, 1849)	Lewis's Woodpecker
	Melanerpes uropygialis‡	*Melanerpes uropygialis* (S. F. Baird, 1854)	Gila Woodpecker
	Sphyrapicus ruber	*Sphyrapicus ruber* (J. F. Gmelin, 1788)	Red-breasted Sapsucker
	Sphyrapicus thyroideus	*Sphyrapicus thyroideus* (Cassin, 1852)	Williamson's Sapsucker
	Sphyrapicus varius nuchalis‡	*Sphyrapicus nuchalis* S. F. Baird, 1858	Red-naped Sapsucker
	Xenopicus albolarvatus	*Dryobates albolarvatus* (Cassin, 1850)	White-headed Woodpecker

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Falconiformes			
Family Falconidae			
	Falco columbarius‡	*Falco columbarius* Linnaeus, 1758	Merlin
	Falco mexicanus	*Falco mexicanus* Schlegel, 1850	Prairie Falcon
	Falco peregrinus anatum‡	*Falco peregrinus* Tunstall, 1771	Peregrine Falcon
	Falco sparverius deserticolus	*Falco sparverius* Linnaeus, 1758	American Kestrel
Order Passeriformes			
Family Tyrannidae			
	Contopus borealis	*Contopus cooperi* (Nuttall, 1831)	Olive-sided Flycatcher
	Contopus richardsonii	*Contopus sordidulus* P. L. Sclater, 1859	Western Wood-pewee
	Empidonax difficilis	*Empidonax difficilis* S. F. Baird, 1858	Western Flycatcher
	Empidonax hammondi	*Empidonax hammondii* (Xántus, 1858)	Hammond's Flycatcher
	Empidonax pusillus	*Empidonax traillii* (Audubon, 1828)	Willow Flycatcher
	Empidonax wrightii	*Empidonax wrightii* S. F. Baird, 1858	Gray Flycatcher
	Myiarchus cinerascens	*Myiarchus cinerascens* (Lawrence, 1851)	Ash-throated Flycatcher
	Pyrocephalus rubineus mexicanus	*Pyrocephalus rubinus* (Boddaert, 1783)	Vermilion Flycatcher
	Sayornis nigricans	*Sayornis nigricans* (Swainson, 1827)	Black Phoebe
	Sayornis saya	*Sayornis saya* (Bonaparte, 1825)	Say's Phoebe
	Tyrannus tyrannus‡	*Tyrannus tyrannus* (Linnaeus, 1758)	Eastern Kingbird
	Tyrannus verticalis	*Tyrannus verticalis* Say, 1822	Western Kingbird
	Tyrannus vociferans‡	*Tyrannus vociferans* Swainson, 1826	Cassin's Kingbird

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Family Vireonidae			
	Vireo bellii pusillus	*Vireo bellii* Audubon, 1844	Bell's Vireo
	Vireo gilvus swainsoni	*Vireo swainsoni* Baird, 1858	Western Warbling-vireo
	Vireo solitarius cassinii	*Vireo solitarius* (A. Wilson, 1810)	Blue-headed Vireo
	Vireo solitarius plumbeus‡	*Vireo plumbeus* Coues, 1866	Plumbeous Vireo
	Vireo vicinior	*Vireo vicinior* Coues, 1866	Gray Vireo
Family Laniidae			
	Lanius ludovicianus excubitorides	*Lanius ludovicianus* Linnaeus, 1766	Loggerhead Shrike
Family Corvidae			
	Aphelocoma californica	*Aphelocoma californica* (Vigors, 1839)	California Scrub-jay
	Aphelocoma woodhousei	*Aphelocoma woodhouseii* (S. F. Baird, 1858)	Woodhouse's Scrub-jay
	Corvus americanus‡	*Corvus brachyrhynchos* C. L. Brehm, 1822	American Crow
	Corvus corax sinuatus	*Corvus corax* Linnaeus, 1758	Common Raven
	Cyanocephalus cyanocephalus	*Gymnorhinus cyanocephalus* Wied-M. Neuwied, 1841	Pinyon Jay
	Cyanocitta stelleri	*Cyanocitta stelleri* (J. F. Gmelin, 1788)	Steller's Jay
	Cyanocitta stelleri frontalis	*Cyanocitta stelleri* (J. F. Gmelin, 1788)	Steller's Jay
	Pica nuttalli	*Pica nuttallii* (Audubon 1837)	Yellow-billed Magpie
	Pica pica hudsonica‡	*Pica hudsonia* (Sabine, 1823)	Black-billed Magpie
	Picicorvus columbianus	*Nucifraga columbiana* (A. Wilson, 1811)	Clark's Nutcracker
Family Remizidae			
	Auriparus flaviceps	*Auriparus flaviceps* (Sundevall, 1850)	Verdin
Family Paridae			
	Parus gambeli	*Poecile gambeli* (Ridgway, 1886)	Mountain Chickadee

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Parus inornatus	*Baeolophus inornatus* (Gambel, 1845)	Oak Titmouse
	Parus inornatus griseus	*Baeolophus inornatus* (Gambel, 1845)	Oak Titmouse
	Parus rufescens neglectus	*Poecile rufescens* (J. K. Townsend, 1837)	Chestnut-backed Chickadee
Family Alaudidae			
	Otocoris alpestris arenicola	*Eremophila alpestris* (Linnaeus, 1758)	Horned Lark
	Otocoris alpestris chrysolaema	*Eremophila alpestris* (Linnaeus, 1758)	Horned Lark
Family Hirundinidae			
	Chelidon erythrogaster‡	*Hirundo rustica* Linnaeus, 1758	Barn Swallow
	Clivicola riparia‡	*Riparia riparia* (Linnaeus, 1758)	Bank Swallow
	Petrochelidon lunifrons‡	*Petrochelidon pyrrhonota* (Vieillot, 1817)	Cliff Swallow
	Progne subis hesperia	*Progne subis* (Linnaeus, 1758)	Purple Martin
	Stelgidopteryx serripennis	*Stelgidopteryx serripennis* (Audubon, 1838)	Northern Rough-winged Swallow
	Tachycineta bicolor‡	*Tachycineta bicolor* (Vieillot, 1808)	Tree Swallow
	Tachycineta thalassina	*Tachycineta thalassina* (Swainson, 1827)	Violet-green Swallow
Family Aegithalidae			
	Psaltriparus minimus californicus	*Psaltriparus minimus* (J. K. Townsend, 1837)	Bushtit
	Psaltriparus plumbeus	*Psaltriparus minimus* (J. K. Townsend, 1837)	Bushtit
Family Sylviidae			
	Chamaea fasciata henshawi	*Chamaea fasciata* (Gambel, 1845)	Wrentit
Family Regulidae			
	Regulus calendula‡	*Corthylio calendula* (Linnaeus, 1766)	Ruby-crowned Kinglet
	Regulus satrapa olivaceus‡	*Regulus satrapa* Lichtenstein, 1823	Golden-crowned Kinglet

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Family Bombycillidae			
	Ampelis cedrorum‡	*Bombycilla garrullus* (Linnaeus, 1758)	Bohemian Waxwing
Family Ptiliogonatidae			
	Phainopepla nitens	*Phainopepla nitens* (Swainson, 1838)	Phainopepla
Family Sittidae			
	Sitta canadensis	*Sitta canadensis* Linnaeus, 1766	Red-breasted Nuthatch
	Sitta carolinensis aculeata	*Sitta carolinensis* Latham, 1790	White-breasted Nuthatch
	Sitta pygmaea	*Sitta pygmaea* Vigors, 1839	Pygmy Nuthatch
Family Certhiidae			
	Certhia familiaris occidentalis	*Certhia americana* Bonaparte, 1838	Brown Creeper
Family Polioptilidae			
	Polioptila caerulea obscura	*Polioptila caerulea* (Linnaeus, 1766)	Blue-gray Gnatcatcher
	Polioptila californica‡	*Polioptila californica* Brewster, 1881	California Gnatcatcher
	Polioptila plumbea	*Polioptila melanura* Lawrence, 1856	Black-tailed Gnatcatcher
Family Troglodytidae			
	Catherpes mexicanus conspersus	*Catherpes mexicanus* (Swainson, 1829)	Canyon Wren
	Cistothorus palustris paludicola	*Cistothorus palustris* (A. Wilson, 1810)	Marsh Wren
	Heleodytes brunneicapillus	*Campylorhynchus brunneicapillus* (Lafresnaye, 1835)	Cactus Wren
	Salpinctes obsoletus	*Salpinctes obsoletus* (Say, 1822)	Rock Wren
	Thryothorus bewickii bairdi	*Thryomanes bewickii* (Audubon, 1827)	Bewick's Wren
	Thryothorus bewickii spilurus	*Thryomanes bewickii* (Audubon, 1827)	Bewick's Wren
	Troglodytes aedon aztecus	*Troglodytes aedon* Vieillot, 1809	Northern House Wren

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Family Mimidae			
	Harporhynchus crissalis	*Toxostoma crissale* Henry, 1858	Crissal Thrasher
	Harporhynchus lecontei	*Toxostoma lecontei* Lawrence, 1851	LeConte's Thrasher
	Harporhynchus redivivus	*Toxostoma redivivum* (Gambel, 1845)	California Thrasher
	Mimus polyglottos	*Mimus polyglottos* (Linnaeus, 1758)	Northern Mockingbird
	Oroscoptes montanus	*Oreoscoptes montanus* (J. K. Townsend, 1837)	Sage Thrasher
Family Cinclidae			
	Cinclus mexicanus	*Cinclus mexicanus* Swainson, 1827	American Dipper
Family Turdidae			
	Hesperocichla naevia	*Ixoreus naevius* (J. F. Gmelin, 1789)	Varied Thrush
	Merula migratoria propinqua	*Turdus migratorius* Linnaeus, 1766	American Robin
	Myadestes townsendii	*Myadestes townsendi* (Audubon, 1838)	Townsend's Solitaire
	Sialia arctica	*Sialia currucoides* (Bechstein, 1798)	Mountain Bluebird
	Sialia mexicana	*Sialia mexicana* Swainson, 1832	Western Bluebird
	Turdus aonalaschkae	*Catharus guttatus* (Pallas, 1811)	Hermit Thrush
	Turdus aonalaschkae auduboni	*Catharus guttatus* (Pallas, 1811)	Hermit Thrush
	Turdus ustulatus	*Catharus ustulatus* (Nuttall, 1840)	Swainson's Thrush
	Turdus ustulatus swainsonii‡	*Catharus ustulatus* (Nuttall, 1840)	Swainson's Thrush
Family Motacillidae			
	Anthus pennsylvanicus	*Anthus rubescens* (Tunstall, 1771)	American Pipit
Family Fringillidae			
	Carpodacus cassini	*Haemorhous cassinii* (S. F. Baird, 1854)	Cassin's Finch

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Carpodacus mexicanus frontalis	*Haemorhous mexicanus* (P. L. S. Müller, 1776)	House Finch
	Coccothraustes vespertinus montanus	*Coccothraustes vespertina* (W. Cooper, 1825)	Evening Grosbeak
	Leucosticte atrata‡	*Leucosticte atrata* Ridgway, 1874	Black Rosy-finch
	Leucosticte tephrocotis	*Leucosticte tephrocotis* (Swainson, 1832)	Gray-crowned Rosy-finch
	Loxia curvirostra stricklandi	*Loxia curvirostra* Linnaeus, 1758	Red Crossbill
	Pinicola enucleator‡	*Pinicola enucleator* (Linnaeus, 1758)	Pine Grosbeak
	Spinus lawrencei	*Spinus lawrencei* (Cassin, 1850)	Lawrence's Goldfinch
	Spinus pinus‡	*Spinus pinus* (A. Wilson, 1810)	Pine Siskin
	Spinus psaltria	*Spinus psaltria* (Say, 1822)	Lesser Goldfinch
	Spinus psaltria arizonae	*Spinus psaltria* (Say, 1822)	Lesser Goldfinch
	Spinus tristis‡	*Spinus tristis* (Linnaeus, 1758)	American Goldfinch
Family Passerellidae			
	Ammodramus sandwichensis alaudinus	*Passerculus sandwichensis* (J. F. Gmelin, 1789)	Savannah Sparrow
	Ammodramus sandwichensis bryanti	*Passerculus sandwichensis* (J. F. Gmelin, 1789)	Savannah Sparrow
	Amphispiza belli‡	*Artemisiospiza belli* (Cassin, 1850)	Bell's Sparrow
	Amphispiza belli nevadensis	*Artemisiospiza nevadensis* (Ridgway, 1874)	Sagebrush Sparrow
	Amphispiza bilineata	*Amphispiza bilineata* (Cassin, 1850)	Black-throated Sparrow
	Calamospiza melanocorys‡	*Calamospiza melanocorys* Stejneger, 1885	Lark Bunting
	Chondestes grammacus strigatus	*Chondestes grammacus* (Say, 1822)	Lark Sparrow
	Junco hyemalis	*Junco hyemalis* (Linnaeus, 1758)	Dark-eyed Junco
	Junco hyemalis shufeldti	*Junco hyemalis* (Linnaeus, 1758)	Dark-eyed Junco
	Junco hyemalis thurberi	*Junco hyemalis* (Linnaeus, 1758)	Dark-eyed Junco

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Junco pinosus‡	*Junco hyemalis* (Linnaeus, 1758)	Dark-eyed Junco
	Melospiza fasciata fallax	*Melospiza melodia* (A. Wilson, 1810)	Song Sparrow
	Melospiza fasciata graminea	*Melospiza melodia* (A. Wilson, 1810)	Song Sparrow
	Melospiza fasciata guttata‡	*Melospiza melodia* (A. Wilson, 1810)	Song Sparrow
	Melospiza fasciata heermanni	*Melospiza melodia* (A. Wilson, 1810)	Song Sparrow
	Melospiza fasciata montana	*Melospiza melodia* (A. Wilson, 1810)	Song Sparrow
	Melospiza fasciata rufina	*Melospiza melodia* (A. Wilson, 1810)	Song Sparrow
	Melospiza lincolni	*Melospiza lincolnii* (Audubon, 1834)	Lincoln's Sparrow
	Passerella iliaca megarhyncha	*Passerella iliaca* (Merrem, 1786)	Fox Sparrow
	Passerella iliaca schistacea	*Passerella iliaca* (Merrem, 1786)	Fox Sparrow
	Passerella iliaca unalaschcensis	*Passerella iliaca* (Merrem, 1786)	Fox Sparrow
	Peucaea cassini	*Peucaea cassinii* (Woodhouse, 1852)	Cassin's Sparrow
	Peucaea ruficeps	*Aimophila ruficeps* (Cassin, 1852)	Rufous-crowned Sparrow
	Pipilo aberti	*Melozone aberti* (S. F. Baird, 1852)	Abert's Towhee
	Pipilo chlorurus	*Pipilo chlorurus* (Audubon, 1839)	Green-tailed Towhee
	Pipilo fuscus crissalis	*Melozone crissalis* (Vigors, 1839)	California Towhee
	Pipilo fuscus mesoleucus‡	*Melozone fusca* (Swainson, 1827)	Canyon Towhee
	Pipilo maculatus megalonyx	*Pipilo maculatus* Swainson, 1827	Spotted Towhee
	Pipilo maculatus oregonus‡	*Pipilo maculatus* Swainson, 1827	Spotted Towhee
	Poocaetes gramineus confinis	*Pooecetes gramineus* (J. F. Gmelin, 1789)	Vesper Sparrow
	Spizella atrigularis	*Spizella atrogularis* (Cabanis, 1851)	Black-chinned Sparrow

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Spizella breweri	*Spizella breweri* Cassin, 1856	Brewer's Sparrow
	Spizella monticola ochracea‡	*Spizelloides arborea* (A. Wilson, 1810)	American Tree Sparrow
	Spizella socialis arizonae	*Spizella passerina* (Bechstein, 1798)	Chipping Sparrow
	Zonotrichia albicollis	*Zonotrichia albicollis* (J. F. Gmelin, 1789)	White-throated Sparrow
	Zonotrichia coronata‡	*Zonotrichia atricapilla* (J. F. Gmelin, 1789)	Golden-crowned Sparrow
	Zonotrichia leucophrys	*Zonotrichia leucophrys* (J. R. Forster, 1772)	White-crowned Sparrow
	Zonotrichia leucophrys gambeli‡	*Zonotrichia leucophrys* (J. R. Forster, 1772)	White-crowned Sparrow
	Zonotrichia leucophrys intermedia	*Zonotrichia leucophrys* (J. R. Forster, 1772)	White-crowned Sparrow
Family Icteriidae			
	Icteria virens longicaudus	*Icteria virens* (Linnaeus, 1758)	Yellow-breasted Chat
Family Icteridae			
	Agelaius gubernator	*Agelaius phoeniceus* (Linnaeus, 1766)	Red-winged Blackbird
	Agelaius phoeniceus	*Agelaius phoeniceus* (Linnaeus, 1766)	Red-winged Blackbird
	Icterus bullocki	*Icterus bullockii* (Swainson, 1827)	Bullock's Oriole
	Icterus parisorum	*Icterus parisorum* Bonaparte, 1838	Scott's Oriole
	Molothrus ater	*Molothrus ater* (Boddaert, 1783)	Brown-headed Cowbird
	Scolecophagus cyanocephalus	*Euphagus cyanocephalus* (Wagler, 1829)	Brewer's Blackbird
	Sturnella magna neglecta	*Sturnella neglecta* Audubon, 1844	Western Meadowlark
	Xanthocephalus xanthocephalus	*Xanthocephalus xanthocephalus* (Bonaparte, 1826)	Yellow-headed Blackbird
Family Parulidae			
	Dendroica aestiva	*Setophaga petechia* (Linnaeus, 1766)	Yellow Warbler

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Dendroica auduboni	*Setophaga coronata* (Linnaeus, 1766)	Yellow-rumped Warbler
	Dendroica nigrescens	*Setophaga nigrescens* (J. K. Townsend, 1837)	Black-throated Gray Warbler
	Dendroica occidentalis	*Setophaga occidentalis* (J. K. Townsend, 1837)	Hermit Warbler
	Dendroica townsendi	*Setophaga townsendi* (J. K. Townsend, 1837)	Townsend's Warbler
	Geothlypis macgillivrayi	*Geothlypis tolmiei* (J. K. Townsend, 1839)	MacGillivray's Warbler
	Geothlypis trichas occidentalis	*Geothlypis trichas* (Linnaeus, 1766)	Common Yellowthroat
	Helminthophila celata lutescens	*Leiothlypis celata* (Say, 1822)	Orange-crowned Warbler
	Helminthophila luciae	*Leiothlypis luciae* (J. G. Cooper, 1861)	Lucy's Warbler
	Helminthophila ruficapilla gutturalis	*Leiothlypis ruficapilla* (A. Wilson, 1811)	Nashville Warbler
	Seiurus noveboracensis notabilis	*Parkesia noveboracensis* (J. F. Gmelin, 1789)	Northern Waterthrush
	Sylvania pusilla pileolata	*Cardellina pusilla* (A. Wilson, 1811)	Wilson's Warbler
Family Cardinalidae			
	Guiraca caerulea eurhyncha	*Passerina caerulea* (Linnaeus, 1758)	Blue Grosbeak
	Habia melanocephala	*Pheucticus melanocephalus* (Swainson, 1827)	Black-headed Grosbeak
	Passerina amoena	*Passerina amoena* (Say, 1822)	Lazuli Bunting
	Piranga hepatica‡	*Piranga flava* (Vieillot, 1822)	Hepatic Tanager
	Piranga ludoviciana	*Piranga ludoviciana* (A. Wilson, 1811)	Western Tanager

APPENDIX V
MAMMAL TAXA COLLECTED, OBSERVED, OR REPORTED DURING THE DEATH VALLEY EXPEDITION

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Lagomorpha			
Family Ochotonidae			
	Ochotona schisticeps	*Ochotona princeps schisticeps* (C. H. Merriam, 1889)	American Pika
Family Leporidae			
	Lepus californicus	*Lepus californicus californicus* J. E. Gray, 1837	Black-tailed Jackrabbit
	Lepus californicus deserticola	*Lepus californicus deserticola* Mearns, 1896	Black-tailed Jackrabbit
	Lepus californicus richardsoni	*Lepus californicus richardsonii* Bachman, 1839	Black-tailed Jackrabbit
	Lepus campestris sierrae‡	*Lepus townsendii sierrae* C. H. Merriam, 1904	White-tailed Jackrabbit
	Lepus campestris townsendi‡	*Lepus townsendii townsendii* Bachman, 1839	White-tailed Jackrabbit
	Sylvilagus auduboni arizonae	*Sylvilagus audubonii arizonae* (J. A. Allen, 1877)	Desert Cottontail
	Sylvilagus auduboni sanctidiegi	*Sylvilagus audubonii sanctidiegi* (G. S. Miller, 1899)	Desert Cottontail
	Sylvilagus auduboni vallicola	***Sylvilagus audubonii vallicola*** E. W. Nelson, 1907	Desert Cottontail
	Sylvilagus bachmani	*Sylvilagus bachmani bachmani* (G. R. Waterhouse, 1839)	Brush Rabbit
	Sylvilagus bachmani	*Sylvilagus bachmani tehamae* Orr, 1935	Brush Rabbit
	Sylvilagus bachmani cinerascens	*Sylvilagus bachmani cinerascens* (J. A. Allen, 1890)	Brush Rabbit
	Sylvilagus bachmani cinerascens	*Sylvilagus bachmani virgulti* Dice, 1926	Brush Rabbit
	Sylvilagus bachmani ubericolor	*Sylvilagus bachmani macrorhinus* Orr, 1935	Brush Rabbit
	Sylvilagus nuttalli grangeri	*Sylvilagus nuttallii grangeri* (J. A. Allen, 1895)	Mountain Cottontail

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Eulipotyphla			
Family Soricidae			
	Sorex obscurus obscurus	*Sorex obscurus obscurus* C. H. Merriam, 1895	Northern Montane Shrew
	Sorex ornatus ornatus	***Sorex ornatus ornatus*** C. H. Merriam, 1895	Ornate Shrew
	Sorex ornatus ornatus	*Sorex ornatus salarius* von Bloeker, 1939	Ornate Shrew
	Sorex palustris navigator	*Sorex navigator navigator* (S. F. Baird, 1857)	Western Water Shrew
	Sorex tenellus	*Sorex tenellus myops* C. H. Merriam, 1902	Inyo Shrew
	Sorex tenellus	***Sorex tenellus tenellus*** C. H. Merriam, 1895	Inyo Shrew
	Sorex trowbridgii mariposae	*Sorex trowbridgii mariposae* J. Grinnell, 1913	Trowbridge's Shrew
	Sorex trowbridgii montereyensis	***Sorex trowbridgii montereyensis*** C. H. Merriam, 1895	Trowbridge's Shrew
	Sorex vagrans amoenus	*Sorex vagrans vagrans* S. F. Baird, 1857	Vagrant Shrew
	Sorex vagrans nevadensis	*Sorex vagrans nevadensis* C. H. Merriam, 1895	Vagrant Shrew
Family Talpidae			
	Scapanus latimanus latimanus	*Scapanus latimanus latimanus* (Bachman, 1842)	Northern Broad-footed Mole
	Scapanus latimanus occultus	*Scapanus occultus grinnelli* H. H. T. Jackson, 1914	Southern Broad-footed Mole
	Scapanus latimanus occultus	*Scapanus occultus occultus* J. Grinnell & Swarth, 1912	Southern Broad-footed Mole
Order Chiroptera			
Family Molossidae			
	Nyctinomus mohavensis	*Tadarida brasiliensis mexicana* (de Saussure, 1860)	Brazilian Free-tailed Bat
Family Vespertilionidae			

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Antrozous pallidus	*Antrozous pallidus pallidus* (Le Conte, 1856)	Common Pallid Bat
	Antrozous pallidus pacificus	*Antrozous pallidus pacificus* C. H. Merriam, 1897	Common Pallid Bat
	Corynorhinus macrotis pallescens	*Corynorhinus townsendii pallescens* G. S. Miller, 1897	Townsend's Big-eared Bat
	Lasiurus borealis teliotis	*Lasiurus frantzii teliotis* (H. Allen, 1891)	Desert Red Bat
	Lasiurus cinereus	*Lasiurus cinereus* (Palisot de Beauvois, 1796)	Northern Hoary Bat
	Myotis californicus	*Myotis californicus californicus* (Audubon & Bachman, 1842)	California Myotis
	Myotis californicus	*Myotis californicus stephensi* Dalquest, 1946	California Myotis
	Myotis californicus	*Myotis ciliolabrum melanorhinus* (C. H. Merriam, 1890)	Western Small-footed Myotis
	Myotis californicus	*Myotis thysanodes thysanodes* G. S. Miller, 1897	Fringed Myotis
	Myotis californicus	*Myotis volans interior* G. S. Miller, 1914	Long-legged Myotis
	Myotis californicus	*Parastrellus hesperus* (H. Allen, 1864)	Canyon Bat
	Myotis evotis	*Myotis evotis evotis* (H. Allen, 1864)	Long-eared Myotis
	Myotis lucifugus longicrus	*Myotis lucifugus relictus* A. H. Harris, 1974	Little Brown Myotis
	Myotis thysanodes	*Myotis thysanodes thysanodes* G. S. Miller, 1897	Fringed Myotis
	Myotis yumanensis	*Myotis yumanensis sociabilis* H. W. Grinnell, 1914	Yuma Myotis
	Myotis yumanensis	*Myotis yumanensis yumanensis* (H. Allen, 1864)	Yuma Myotis
	Pipistrellus hesperus	*Parastrellus hesperus* (H. Allen, 1864)	Canyon Bat
	Vespertilio fuscus	*Eptesicus fuscus bernardinus* Rhoads, 1902	Big Brown Bat
	Vespertilio fuscus	*Eptesicus fuscus pallidus* R. T. Young, 1908	Big Brown Bat

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Order Carnivora			
Family Felidae			
	Felis oregonensis oregonensis	*Puma concolor* (Linnaeus, 1771)	Puma
	Lynx rufus baileyi	*Lynx rufus baileyi* C. H. Merriam, 1890	Bobcat
	Lynx rufus californicus	*Lynx rufus californicus* Mearns, 1897	Bobcat
	Lynx rufus pallescens	*Lynx rufus pallescens* C. H. Merriam, 1899	Bobcat
Family Canidae			
	Canis gigas‡	*Canis lupus* Linnaeus, 1758	Gray Wolf
	Canis latrans estor	*Canis latrans estor* C. H. Merriam, 1897	Coyote
	Canis latrans lestes	***Canis latrans lestes*** C. H. Merriam, 1897	Coyote
	Canis latrans ochropus	*Canis latrans ochropus* von Eschscholtz, 1829	Coyote
	Urocyon cinereoargenteus californicus	*Urocyon cinereoargenteus californicus* Mearns, 1897	Northern Gray Fox
	Urocyon cinereoargenteus scotti‡	*Urocyon cinereoargenteus scottii* Mearns, 1891	Northern Gray Fox
	Urocyon cinereoargenteus townsendi	*Urocyon cinereoargenteus townsendi* C. H. Merriam, 1899	Northern Gray Fox
	Vulpes macrotis arsipus	*Vulpes macrotis arsipus* D. G. Elliot, 1904	Kit Fox
	Vulpes macrotis macrotis	*Vulpes macrotis macrotis* C. H. Merriam, 1888	Kit Fox
	Vulpes macrotis nevadensis	*Vulpes macrotis nevadensis* E. A. Goldman, 1931	Kit Fox
	Vulpes necator	*Vulpes vulpes necator* C. H. Merriam, 1900	Red Fox
Family Ursidae			
	Ursus americanus altifrontalis	*Ursus americanus* Pallas, 1780	American Black Bear
	Ursus horribilis californicus‡	*Ursus arctos* Linnaeus, 1758	Brown Bear

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Family Otariidae			
	Zalophus californianus‡	*Zalophus californianus californianus* (Lesson, 1828)	California Sea Lion
Family Phocidae			
	Phoca richardi geronimensis‡	*Phoca vitulina richardii* (J. E. Gray, 1864)	Harbor Seal
Family Mustelidae			
	Gulo luscus luteus‡	*Gulo gulo* (Linneaus, 1758)	Wolverine
	Lutra canadensis pacifica‡	*Lontra canadensis* (von Schreber, 1776)	North American River Otter
	Martes caurina sierrae	*Martes caurina sierrae* J. Grinnell & Storer, 1916	Pacific Marten
	Martes pennanti pacifica‡	*Pekania pennanti pacifica* (Rhoads, 1898)	Fisher
	Mustela vison energumenos‡	*Neogale vison* (von Schreber, 1777)	American Mink
	Putorius arizonensis	*Neogale frenata* (H. Lichtenstein, 1831)	Long-tailed Weasel
	Putorius xanthogenys	*Neogale frenata* (H. Lichtenstein, 1831)	Long-tailed Weasel
	Taxidea taxus berlandieri	*Taxidea taxus berlandieri* S. F. Baird, 1857	American Badger
	Taxidea taxus neglecta	*Taxidea taxus jeffersonii* (Harlan, 1825)	American Badger
	Taxidea taxus taxus‡	*Taxidea taxus* (von Schreber, 1778)	American Badger
Family Mephitidae			
	Mephitis mephitis estor‡	*Mephitis mephitis estor* C. H. Merriam, 1890	Striped Skunk
	Mephitis mephitis holzneri	*Mephitis mephitis holzneri* Mearns, 1897	Striped Skunk
	Mephitis mephitis holzneri	*Mephitis mephitis occidentalis* S. F. Baird, 1857	Striped Skunk
	Mephitis mephitis occidentalis	*Mephitis mephitis occidentalis* S. F. Baird, 1857	Striped Skunk
	Spilogale gracilis	*Spilogale gracilis gracilis* C. H. Merriam, 1890	Western Spotted Skunk

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Spilogale phenax	*Spilogale gracilis phenax* C. H. Merriam, 1890	Western Spotted Skunk
Family Procyonidae			
	Bassariscus astutus raptor	*Bassariscus astutus raptor* (S. F. Baird, 1859)	Ringtail
	Procyon psora psora	*Procyon lotor psora* J. E. Gray, 1842	Northern Raccoon
Order Artiodactyla			
Family Cervidae			
	Cervus nannodes‡	*Cervus canadensis nannodes* C. H. Merriam, 1905	Wapiti
	Odocoileus columbianus scaphiotus‡	*Odocoileus hemionus scaphiotus* C. H. Merriam, 1898	Mule Deer
	Odocoileus hemionus californicus	*Odocoileus hemionus californicus* (Caton, 1876)	Mule Deer
	Odocoileus hemionus hemionus	*Odocoileus hemionus hemionus* (Rafinesque, 1817)	Mule Deer
Family Antilocapridae			
	Antilocapra americana americana‡	*Antilocapra americana americana* (Ord, 1815)	Pronghorn
Family Bovidae			
	Ovis canadensis nelsoni	***Ovis canadensis nelsoni*** C. H. Merriam, 1897	Bighorn Sheep
	Ovis canadensis sierrae‡	*Ovis canadensis sierrae* J. Grinnell, 1912	Bighorn Sheep
Order Rodentia			
Family Aplodontiidae			
	Aplodontia californica‡	*Aplodontia rufa californica* W. C. H. Peters, 1864	Mountain Beaver
Family Sciuridae			
	Citellus beecheyi beecheyi	*Otospermophilus beecheyi beecheyi* (J. Richardson, 1829)	California Ground Squirrel
	Citellus beecheyi fisheri	***Otospermophilus beecheyi fisheri*** (C. H. Merriam, 1893)	California Ground Squirrel

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Citellus beecheyi parvulus	*Otospermophilus beecheyi parvulus* (A. H. Howell, 1931)	California Ground Squirrel
	Citellus beecheyi sierrae	*Otospermophilus beecheyi sierrae* (A. H. Howell, 1938)	California Ground Squirrel
	Citellus beldingi beldingi	*Urocitellus beldingi beldingi* (C. H. Merriam, 1888)	Belding's Ground Squirrel
	Citellus lateralis chrysodeirus	*Callospermophilus lateralis chrysodeirus* (C. H. Merriam, 1890)	Common Golden-mantled Ground Squirrel
	Citellus lateralis trepidus	*Callospermophilus lateralis trepidus* W. P. Taylor, 1910	Common Golden-mantled Ground Squirrel
	Citellus leucurus leucurus	*Ammospermophilus leucurus leucurus* (C. H. Merriam, 1889)	White-tailed Antelope Squirrel
	Citellus leucurus leucurus	*Ammospermophilus leucurus escalante* (R. M. Hansen, 1955)	White-tailed Antelope Squirrel
	Citellus mohavensis	*Xerospermophilus mohavensis mohavensis* (C. H. Merriam, 1889)	Mohave Ground Squirrel
	Citellus nelsoni	*Ammospermophilus nelsoni nelsoni* (C. H. Merriam, 1893)	Nelson's Antelope Squirrel
	Citellus tereticaudus chlorus	*Xerospermophilus tereticaudus chlorus* (D. G. Elliot, 1904)	Round-tailed Ground Squirrel
	Citellus tereticaudus tereticaudus	*Xerospermophilus tereticaudus tereticaudus* (S. F. Baird, 1857)	Round-tailed Ground Squirrel
	Citellus townsendii mollis	*Urocitellus mollis mollis* (Kennicott, 1863)	Piute Ground Squirrel
	Citellus variegatus grammurus	*Otospermophilus variegatus utah* (C. H. Merriam, 1903)	Common Rock Squirrel
	Eutamias alpinus	***Neotamias alpinus alpinus*** (C. H. Merriam, 1893)	Alpine Chipmunk
	Eutamias amoenus monoensis	*Neotamias amoenus monoensis* (J. Grinnell & Storer, 1916)	Yellow-pine Chipmunk
	Eutamias callipeplus	*Neotamias speciosus callipeplus* (C. H. Merriam, 1893)	Lodgepole Chipmunk
	Eutamias dorsalis utahensis	*Neotamias dorsalis utahensis* (C. H. Merriam, 1897)	Cliff Chipmunk

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Eutamias merriami kernensis	*Neotamias merriami kernensis* (J. Grinnell & Storer, 1916)	Merriam's Chipmunk
	Eutamias merriami merriami	*Neotamias merriami merriami* (J. A. Allen, 1889)	Merriam's Chipmunk
	Eutamias merriami pricei	*Neotamias merriami pricei* (J. A. Allen, 1895)	Merriam's Chipmunk
	Eutamias minimus pictus	*Neotamias minimus pictus* (J. A. Allen, 1890)	Least Chipmunk
	Eutamias palmeri	***Neotamias palmeri palmeri*** (C. H. Merriam, 1897)	Palmer's Chipmunk
	Eutamias panamintinus	*Neotamias panamintinus panamintinus* (C. H. Merriam, 1893)	Panamint Chipmunk
	Eutamias quadrimaculatus	*Neotamias quadrimaculatus* (J. E. Gray, 1867)	Long-eared Chipmunk
	Eutamias quadrivittatus frater	*Neotamias speciosus frater* (J. A. Allen, 1890)	Lodgepole Chipmunk
	Eutamias quadrivittatus inyoensis	*Neotamias umbrinus inyoensis* (C. H. Merriam, 1897)	Uinta Chipmunk
	Eutamias quadrivittatus sequoiensis	***Neotamias speciosus sequoiensis*** (A. H. Howell, 1922)	Lodgepole Chipmunk
	Eutamias townsendii senex	*Neotamias senex senex* (J. A. Allen, 1890)	Shadow Chipmunk
	Glaucomys sabrinus lascivus‡	*Glaucomys oregonensis lascivus* (Bangs, 1899)	Humboldt's Flying Squirrel
	Marmota flaviventris parvula	*Marmota flaviventris fortirostris* J. Grinnell, 1921	Yellow-bellied Marmot
	Marmota flaviventris sierrae	***Marmota flaviventris sierrae*** A. H. Howell, 1915	Yellow-bellied Marmot
	Sciurus douglasi albolimbatus	*Tamiasciurus douglasii albolimbatus* (J. A. Allen, 1898)	Douglas's Squirrel
	Sciurus griseus anthonyi	*Sciurus griseus anthonyi* Mearns, 1897	Western Gray Squirrel
	Sciurus griseus griseus	*Sciurus griseus griseus* Ord, 1818	Western Gray Squirrel
	Sciurus griseus nigripes	*Sciurus griseus nigripes* W. E. Bryant, 1889	Western Gray Squirrel

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
Family Castoridae			
	Castor canadensis frondator‡	*Castor canadensis repentinus* E. A. Goldman, 1932	North American Beaver
	Castor subauratus‡	*Castor canadensis subauratus* W. P. Taylor, 1912	North American Beaver
Family Heteromyidae			
	Dipodomys agilis agilis	*Dipodomys agilis agilis* Gambel, 1848	Agile Kangaroo Rat
	Dipodomys agilis perplexus	***Dipodomys agilis perplexus*** (C. H. Merriam, 1907)	Agile Kangaroo Rat
	Dipodomys deserti	*Dipodomys deserti deserti* Stephens, 1887	Desert Kangaroo Rat
	Dipodomys heermanni swarthi	*Dipodomys heermanni jolonensis* J. Grinnell, 1919	Heermann's Kangaroo Rat
	Dipodomys heermanni swarthi	*Dipodomys heermanni swarthi* (J. Grinnell, 1919)	Heermann's Kangaroo Rat
	Dipodomys leucogenys	*Dipodomys panamintinus leucogenys* (J. Grinnell, 1919)	Panamint Kangaroo Rat
	Dipodomys levipes	***Dipodomys microps levipes*** (C. H. Merriam, 1904)	Chisel-toothed Kangaroo Rat
	Dipodomys merriami merriami	*Dipodomys merriami merriami* Mearns, 1890	Merriam's Kangaroo Rat
	Dipodomys merriami parvus	*Dipodomys merriami parvus* Rhoads, 1894	Merriam's Kangaroo Rat
	Dipodomys merriami simiolus	*Dipodomys merriami merriami* Mearns, 1890	Merriam's Kangaroo Rat
	Dipodomys merriami vulcani	*Dipodomys merriami frenatus* Bole, 1936	Merriam's Kangaroo Rat
	Dipodomys microps	*Dipodomys microps microps* (C. H. Merriam, 1904)	Chisel-toothed Kangaroo Rat
	Dipodomys microps celsus	*Dipodomys microps celsus* E. A. Goldman, 1924	Chisel-toothed Kangaroo Rat
	Dipodomys microps centralis	*Dipodomys microps centralis* E. R. Hall & Dale, 1939	Chisel-toothed Kangaroo Rat
	Dipodomys microps occidentalis	*Dipodomys microps occidentalis* E. R. Hall & Dale, 1939	Chisel-toothed Kangaroo Rat

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Dipodomys mohavensis	*Dipodomys panamintinus mohavensis* (J. Grinnell, 1918)	Panamint Kangaroo Rat
	Dipodomys morroensis	***Dipodomys heermanni morroensis*** (C. H. Merriam, 1907)	Heermann's Kangaroo Rat†
	Dipodomys nitratoides exilis	***Dipodomys nitratoides exilis*** C. H. Merriam, 1894	San Joaquin Kangaroo Rat†
	Dipodomys nitratoides nitratoides	*Dipodomys nitratoides nitratoides* C. H. Merriam, 1894	San Joaquin Kangaroo Rat
	Dipodomys ordii columbianus	*Dipodomys ordii columbianus* (C. H. Merriam, 1894)	Ord's Kangaroo Rat
	Dipodomys panamintinus	*Dipodomys panamintinus panamintinus* (C. H. Merriam, 1894)	Panamint Kangaroo Rat
	Microdipodops megacephalus megacephalus	*Microdipodops megacephalus megacephalus* C. H. Merriam, 1891	Dark Kangaroo Mouse
	Perognathus californicus dispar	***Chaetodipus californicus dispar*** (Osgood, 1900)	California Pocket Mouse
	Perognathus californicus dispar	*Chaetodipus californicus marinensis* (von Bloeker, 1938)	California Pocket Mouse
	Perognathus californicus dispar	*Chaetodipus californicus ochrus* (Osgood, 1904)	California Pocket Mouse
	Perognathus fallax	*Chaetodipus fallax fallax* (C. H. Merriam, 1889)	San Diego Pocket Mouse
	Perognathus formosus	*Chaetodipus formosus formosus* (C. H. Merriam, 1889)	Long-tailed Pocket Mouse
	Perognathus formosus	*Chaetodipus formosus mohavensis* (Huey, 1938)	Long-tailed Pocket Mouse
	Perognathus longimembris	*Perognathus inornatus inornatus* C. H. Merriam, 1889	San Joaquin Pocket Mouse
	Perognathus nevadensis	*Perognathus longimembris nevadensis* C. H. Merriam, 1894	Little Pocket Mouse
	Perognathus panamintinus	***Perognathus longimembris panamintinus*** C. H. Merriam, 1894	Little Pocket Mouse
	Perognathus panamintinus	*Perognathus longimembris virginis* Huey, 1939	Little Pocket Mouse

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Perognathus panamintinus	*Perognathus mollipilosus olivaceus* Merriam, 1889	Great Basin Pocket Mouse
	Perognathus panamintinus bangsi	*Perognathus longimembris brevinasus* Osgood, 1900	Little Pocket Mouse
	Perognathus panamintinus bangsi	*Perognathus longimembris longimembris* (Coues, 1875)	Little Pocket Mouse
	Perognathus parvus magruderensis	***Perognathus mollipilosus magruderensis*** Osgood, 1900	Great Basin Pocket Mouse
	Perognathus parvus olivaceus	*Perognathus mollipilosus olivaceus* C. H. Merriam, 1889	Great Basin Pocket Mouse
	Perognathus penicillatus	***Chaetodipus penicillatus sobrinus*** (E. A. Goldman, 1939)	Desert Pocket Mouse
	Perognathus penicillatus angustirostris	*Chaetodipus penicillatus angustirostris* (Osgood, 1900)	Desert Pocket Mouse
	Perognathus spinatus	*Chaetodipus spinatus rufescens* (Huey, 1930)	Spiny Pocket Mouse
	Perognathus stephensi	***Chaetodipus penicillatus stephensi*** (C. H. Merriam, 1894)	Desert Pocket Mouse
Family Geomyidae			
	Thomomys alpinus alpinus	***Megascapheus fulvus alpinus*** (C. H. Merriam, 1897)	Fulvous Pocket Gopher
	Thomomys alpinus awahnee	*Megascapheus laticeps awahnee* (C. H. Merriam, 1908)	Northern California Pocket Gopher
	Thomomys alpinus awahnee	*Megascapheus bottae mewa* (C. H. Merriam, 1908)	Botta's Pocket Gopher
	Thomomys bottae bottae	*Megascapheus bottae bottae* (Eydoux & P. Gervais, 1836)	Botta's Pocket Gopher
	Thomomys bottae mewa	*Megascapheus bottae mewa* (C. H. Merriam, 1908)	Botta's Pocket Gopher
	Thomomys bottae pascalis	*Megascapheus bottae pascalis* (C. H. Merriam, 1901)	Botta's Pocket Gopher
	Thomomys bottae pascalis	*Megascapheus bottae bottae* (Eydoux & P. Gervais, 1836)	Botta's Pocket Gopher
	Thomomys monticola monticola	*Thomomys monticolus* J. A. Allen, 1893	Mountain Pocket Gopher

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Thomomys operarius	*Megascapheus fulvus operarius* (C. H. Merriam, 1897)	Fulvous Pocket Gopher
	Thomomys perpallidus aureus	*Megascapheus fulvus* (S. W. Woodhouse, 1853)	Fulvous Pocket Gopher
	Thomomys perpallidus perpes	*Megascapheus fulvus* (S. W. Woodhouse, 1853)	Fulvous Pocket Gopher
	Thomomys perpallidus perpes	*Megascapheus bottae* (Eydoux & P. Gervais, 1836)	Botta's Pocket Gopher
	Thomomys quadratus fisheri	*Thomomys talpoides falcifer* J. Grinnell, 1926	Northern Pocket Gopher
	Thomomys quadratus fisheri	*Thomomys talpoides monoensis* Huey, 1934	Northern Pocket Gopher
	Thomomys townsendi nevadensis	***Megascapheus townsendii nevadensis*** (C. H. Merriam, 1897)	Townsend's Pocket Gopher
Family Zapodidae			
	Zapus trinotatus alleni	*Zapus pacificus pacificus* C. H. Merriam, 1897	Southern Pacific Jumping Mouse
Family Cricetidae			
	Microtus californicus	*Microtus californicus californicus* (T. R. Peale, 1848)	California Vole
	Microtus californicus	*Microtus californicus kernensis* R. Kellogg, 1918	California Vole
	Microtus californicus	*Microtus californicus mariposae* R. Kellogg, 1918	California Vole
	Microtus californicus	*Microtus californicus sanctidiegi* R. Kellogg, 1922	California Vole
	Microtus californicus	*Microtus longicaudus sierrae* R. Kellogg, 1922	Long-tailed Vole
	Microtus californicus vallicola	***Microtus californicus vallicola*** V. O. Bailey, 1898	California Vole
	Microtus curtatus	*Lemmiscus curtatus curtatus* (Cope, 1868)	Sagebrush Vole
	Microtus curtatus	*Lemmiscus curtatus intermedius* (W. P. Taylor, 1911)	Sagebrush Vole
	Microtus dutcheri	***Microtus montanus dutcheri*** V. O. Bailey, 1898	Montane Vole

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Microtus dutcheri	*Microtus montanus montanus* (T. R. Peale, 1849)	Montane Vole
	Microtus montanus	*Microtus montanus micropus* E. R. Hall, 1935	Montane Vole
	Microtus montanus rivularis	*Microtus montanus rivularis* V. O. Bailey, 1898	Montane Vole
	Microtus mordax	*Microtus longicaudus latus* E. R. Hall, 1931	Long-tailed Vole
	Microtus mordax	*Microtus longicaudus sierrae* R. Kellogg, 1922	Long-tailed Vole
	Microtus nevadensis	*Microtus montanus fucosus* E. R. Hall, 1935	Montane Vole
	Microtus nevadensis	***Microtus montanus nevadensis*** V. O. Bailey, 1898	Montane Vole
	Microtus scirpensis	***Microtus californicus scirpensis*** V. O. Bailey, 1900	California Vole
	Neotoma cinerea	*Neotoma cinerea acraia* (D. G. Elliot, 1904)	Bushy-tailed Woodrat
	Neotoma desertorum	*Neotoma lepida lepida* O. Thomas, 1893	Desert Woodrat
	Neotoma fuscipes annectens	*Neotoma fuscipes annectens* D. G. Elliot, 1898	Dusky-footed Woodrat
	Neotoma fuscipes macrotis	*Neotoma macrotis luciana* Hooper, 1938	Big-eared Woodrat
	Neotoma fuscipes macrotis	*Neotoma macrotis macrotis* O. Thomas, 1893	Big-eared Woodrat
	Neotoma fuscipes simplex	***Neotoma macrotis simplex*** F. W. True, 1894	Big-eared Woodrat
	Neotoma fuscipes streatori	*Neotoma macrotis streatori* C. H. Merriam, 1894	Big-eared Woodrat
	Neotoma intermedia	*Neotoma bryanti intermedia* Rhoads, 1894	Bryant's Woodrat
	Neotoma intermedia gilva	***Neotoma bryanti intermedia*** Rhoads, 1894	Bryant's Woodrat
	Neotoma lepida monstrabilis	*Neotoma lepida lepida* O. Thomas, 1893	Desert Woodrat
	Onychomys leucogaster brevicaudus	*Onychomys leucogaster brevicaudus* C. H. Merriam, 1891	Northern Grasshopper Mouse

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Onychomys torridus clarus	***Onychomys torridus clarus*** Hollister, 1913	Southern Grasshopper Mouse
	Onychomys torridus longicaudus	*Onychomys torridus longicaudus* C. H. Merriam, 1889	Southern Grasshopper Mouse
	Onychomys torridus pulcher	*Onychomys torridus pulcher* D. G. Elliot, 1904	Southern Grasshopper Mouse
	Onychomys torridus ramona	*Onychomys torridus ramona* Rhoads, 1893	Southern Grasshopper Mouse
	Onychomys torridus tularensis	*Onychomys torridus tularensis* C. H. Merriam, 1904	Southern Grasshopper Mouse
	Peromyscus boylei	*Peromyscus boylii boylii* (S. F. Baird, 1855)	Brush Deermouse
	Peromyscus boylei rowleyi	*Peromyscus boylii rowleyi* (J. A. Allen, 1893)	Brush Deermouse
	Peromyscus californicus	*Peromyscus californicus californicus* (Gambel, 1849)	California Deermouse
	Peromyscus crinitus	*Peromyscus crinitus crinitus* (C. H. Merriam, 1891)	Canyon Deermouse
	Peromyscus crinitus stephensi	*Peromyscus crinitus stephensi* Mearns, 1897	Canyon Deermouse
	Peromyscus eremicus	*Peromyscus eremicus eremicus* (S. F. Baird, 1857)	Cactus Deermouse
	Peromyscus eremicus fraterculus	*Peromyscus fraterculus* (G. S. Miller, 1892)	Northern Baja Deermouse
	Peromyscus maniculatus gambeli	*Peromyscus gambelii* (S. F. Baird, 1857)	Gambel's Deermouse
	Peromyscus maniculatus gambeli	*Peromyscus sonoriensis* (Le Conte, 1853)	Western Deermouse
	Peromyscus maniculatus sonoriensis	*Peromyscus gambelii* (S. F. Baird, 1857)	Gambel's Deermouse
	Peromyscus maniculatus sonoriensis	*Peromyscus sonoriensis* (Le Conte, 1853)	Western Deermouse
	Peromyscus truei	*Peromyscus truei montipinoris* D. G. Elliot, 1904	Pinyon Deermouse
	Peromyscus truei	*Peromyscus truei truei* (Shufeldt, 1885)	Pinyon Deermouse
	Peromyscus truei gilberti	*Peromyscus truei dyselius* D. G. Elliot, 1898	Pinyon Deermouse

Modern-day Order and Family	Death Valley Expedition Taxon	Modern-day Taxon	Modern-day Common Name
	Peromyscus truei gilberti	*Peromyscus truei gilberti* (J. A. Allen, 1893)	Pinyon Deermouse
	Reithrodontomys megalotis longicaudus	*Reithrodontomys megalotis longicauda* (S. F. Baird, 1857)	Western Harvest Mouse
	Reithrodontomys megalotis megalotis	*Reithrodontomys megalotis megalotis* (S. F. Baird, 1857)	Western Harvest Mouse
Family Muridae			
	Epimys rattus	*Rattus rattus* (Linnaeus, 1758)	Roof Rat
	Mus musculus musculus	*Mus musculus domesticus* Walther, 1819	House Mouse
Family Erethizontidae			
	Erethizon epixanthum epixanthum‡	*Erethizon dorsatum epixanthum* J. F. von Brandt, 1835	North American Porcupine

APPENDIX VI

LOCALITIES WHERE VERTEBRATES WERE COLLECTED, OBSERVED, OR REPORTED FROM DURING THE DEATH VALLEY EXPEDITION

Death Valley Expedition Locality Name	County	State
20 Mile Spring	Inyo	California
Adobe Station	Kern	California
Adobe Station, 10 miles south of	Kern	California
Alabama Hills	Inyo	California
Alila	Tulare	California
Alvord	Inyo	California
Alvord, 6 miles south of	Inyo	California
Alvord, 8 miles south of	Inyo	California
Amargosa	Inyo	California
Amargosa Borax Works	Inyo	California
Amargosa Cañon	Inyo / San Bernardino	California
Amargosa Desert	Nye	Nevada
Amargosa River, 10 miles north of Amargosa Borax Works	Inyo	California
Amargosa River, near Death Valley Junction	Inyo	California
Amargosa River, near Saratoga Springs	San Bernardino	California
Amargosa Valley	Inyo / Nye	California / Nevada
American River, Middle Fork, 3 miles from Auburn	Placer	California
Antelope Valley	Los Angeles / Kern	California
Argus Mountains	Inyo	California
Ash Creek	Inyo	California
Ash Meadows	Nye	Nevada
Ash Meadows, 15 miles north of	Nye	Nevada
Ash Meadows, 20 miles north of, half way to Oasis Valley	Nye	Nevada
Auburn	Placer	California
Austin	Lander	Nevada
Austin, 5 miles south of	Lander	Nevada
Austin, 10 miles north of	Lander	Nevada
Bakersfield	Kern	California
Banning, 3 miles east of	Riverside	California
Battle Mountain	Lander	Nevada
Battle Mountain, 3 miles south of	Lander	Nevada
Battle Mountain, half way to Austin	Lander	Nevada

Death Valley Expedition Locality Name	County	State
Beaver Dam	Mohave	Arizona
Beaver Dam Creek	Mohave	Arizona
Beaver Dam Creek, mouth	Mohave	Arizona
Beaver Dam Mountains	Washington	Utah
Bennett Wells	Inyo	California
Bennett Wells, 5 miles southwest of	Inyo	California
Bennett Wells, 10 miles southwest of	Inyo	California
Benton	Mono	California
Benton Station	Mono	California
Benton, 6 miles north of	Mono	California
Benton, 10 miles west of	Mono	California
Benton, 25 miles west of	Mono	California
Big Cottonwood Meadows	Inyo	California
Big Meadows	Tulare	California
Big Pine	Inyo	California
Big Whitney Meadows	Tulare	California
Bighorn Cañon	Inyo	California
Bishop	Inyo	California
Bishop, 6 miles north of	Inyo	California
Bishop Creek	Inyo	California
Black Cañon	Inyo	California
Black Mountains	Inyo	California
Blossom Spring	Lander	Nevada
Borax Flat Borax Works	San Bernardino	California
Borax Flat Water Station	Inyo	California
Borax Flat, near pass to Panamint Valley	Inyo	California
Boulder Creek	Santa Cruz	California
Boundary Cañon	Inyo	California
Boundary Spring	Inyo	California
Browns Peak	San Bernardino	California
Bubbs Creek, downstream half	Fresno	California
Bubbs Creek, mouth	Fresno	California
Buena Vista Lake, south end	Kern	California
Bunkerville	Clark	Nevada
Bunkerville, 8 miles southwest of	Clark	Nevada
Cajon Pass	San Bernardino	California
Caliente	Kern	California

Death Valley Expedition Locality Name	County	State
Caliente, 3 miles northeast of	Kern	California
Callville	Clark	Nevada
Cameron	Kern	California
Cameron, 2 miles east of	Kern	California
Cañada de las Uvas	Kern	California
Carpinteria	Santa Barbara	California
Carrizo Plain	San Luis Obispo	California
Cartago	Inyo	California
Casa Diablo Springs	Mono	California
Castac Lake	Kern	California
Cave Camp	Nye	Nevada
Centerville	Fresno	California
Charcoal Kilns	Inyo	California
Charleston Mountains	Clark	Nevada
Charleston Mountains, east slope	Clark	Nevada
Charleston Peak	Clark	Nevada
Charlotte Lake	Fresno	California
Chiquito	Madera	California
Cloverdale Creek, 3 miles below the divide	Nye	Nevada
Colfax	Placer	California
Colorado River	Clark	Nevada
Colorado River at Las Vegas Wash	Clark	Nevada
Columbus	Esmeralda	Nevada
Corn Creek	Clark	Nevada
Coso	Inyo	California
Coso Mountains	Inyo	California
Coso Peak	Inyo	California
Coso Valley	Inyo	California
Cottonwood Cañon, Panamint Mountains	Inyo	California
Cottonwood Creek, Panamint Mountains	Inyo	California
Cottonwood Creek, White Mountains	Inyo / Mono	California
Cottonwood Springs, Las Vegas Valley	Clark	Nevada
Coyote Flat	Inyo	California
Coyote Holes (San Bernardino County)	San Bernardino	California
Crooked Creek	Mono	California
Cuesta Pass	San Luis Obispo	California

Death Valley Expedition Locality Name	County	State
Cuyama Valley	San Luis Obispo / Santa Barbara	California
Daggett	San Bernardino	California
Daggett, 10 miles southwest of	San Bernardino	California
Darwin	Inyo	California
Death Valley	Inyo	California
Death Valley, at base of Panamint Mountains	Inyo	California
Death Valley, south end	Inyo	California
Decker's Camp	Inyo	California
Deep Spring - Owens Valley Pass	Inyo	California
Deep Spring Valley	Inyo	California
Deep Spring Valley, on mountains near valley	Inyo	California
Delano	Kern	California
Delano, 6 miles south of town	Kern	California
Desert Valley	Lincoln	Nevada
Devils Hole	Nye	Nevada
Diamond Valley	Washington	Utah
Dick's Ranch	Tulare	California
Elizabeth Lake	Los Angeles	California
Elk Bayou	Tulare	California
Emigrant Cañon	Inyo	California
Emigrant Cañon, at head of	Inyo	California
Emigrant Spring	Inyo	California
Empire Mine	Tulare	California
Escalante Desert	Iron	Utah
Farewell Gap	Tulare	California
Fish Camp	Mariposa	California
Fish Lake Valley	Esmeralda	Nevada
Fish Slough	Mono	California
Fort Tejon	Kern	California
Fort Tejon, 8 miles north of	Kern	California
Frazier Mountain	Ventura	California
Fresno	Fresno	California
Funeral Mountains	Inyo	California
Furnace Creek Wash	Inyo	California
Garlick Spring	San Bernardino	California
Gaviota Pass	Santa Barbara	California

Death Valley Expedition Locality Name	County	State
Gold Mountain	Esmeralda	Nevada
Gorman Station	Los Angeles	California
Granite Mountains, near base of	San Bernardino	California
Granite Springs	San Bernardino	California
Grapevine Cañon	Inyo	California
Grapevine Mountains	Inyo	California
Grapevine Peak	Nye	Nevada
Grapevine Ranch	Inyo	California
Grapevine Spring	Inyo	California
Great Bend of the Colorado	Clark	Nevada
Greenland Ranch	Inyo	California
Haiwee Meadows	Inyo	California
Halsted Meadows	Tulare	California
Havilah	Kern	California
Havilah, 3 miles south of	Kern	California
Hesperia	San Bernardino	California
Hesperia, 3 miles northeast of	San Bernardino	California
Hesperia, 4 miles southeast of	San Bernardino	California
Hesperia, 15 miles west of	San Bernardino	California
Horse Corral Meadows	Fresno	California
Hot Springs Valley	Inyo	California
Hot Springs, Panamint Valley	Inyo	California
Hot Springs, Panamint Valley, near to	Inyo	California
Hunter Cañon	Inyo	California
Hunter Mountain	Inyo	California
Independence	Inyo	California
Independence Creek	Inyo	California
Independence, 6 miles north of	Inyo	California
Indian Creek, 2 miles above junction with Reese River	Nye	Nevada
Indian Joe Cañon	Inyo	California
Indian Joe Cañon, mouth	Inyo	California
Indian Queen	Mineral	Nevada
Indian Queen Mill	Mineral	Nevada
Indian Queen Mine	Clark	Nevada
Indian Spring Valley	Clark	Nevada
Indian Wells, 4 miles north of	Kern	California
Inyo Mountains	Inyo	California

Death Valley Expedition Locality Name	County	State
Inyo Mountains, near Lone Pine	Inyo	California
Inyo Mountains, Waucoba Mountain	Inyo	California
Jackass Spring	Inyo	California
Johnson Cañon	Inyo	California
Juniper Mountains	Lincoln	Nevada
Juniper Mountains, 12 miles east of Panaca	Lincoln	Nevada
Kaweah River, East Fork, Mineral King	Tulare	California
Kaweah River, East Fork, Three Rivers to Mineral King	Tulare	California
Keeler	Inyo	California
Keeler, 3 miles east of	Inyo	California
Kern River Lakes	Tulare	California
Kern River, intersection of South and North Forks	Kern	California
Kern River, North Fork, head of	Tulare	California
Kern River, North Fork, near head	Tulare	California
Kern River Valley	Kern	California
Kernville	Kern	California
Kernville, 10 miles south of	Kern	California
Kernville, 11 miles south of	Kern	California
Kernville, 12 miles south of	Kern	California
Kings River	Fresno	California
Kings River Cañon	Fresno	California
Kings River, South Fork	Fresno	California
La Panza	San Luis Obispo	California
Lake Sabrina	Inyo	California
Lancaster	Los Angeles	California
Las Vegas Ranch	Clark	Nevada
Las Vegas Ranch, 9 miles southwest of	Clark	Nevada
Las Vegas Valley	Clark	Nevada
Las Vegas Wash	Clark	Nevada
Leach Point Spring	San Bernardino	California
Leach Point Valley	San Bernardino	California
Leach Spring, 2 miles northwest of	San Bernardino	California
Lerdo	Kern	California
Liebre Ranch	Los Angeles	California
Liebre Ranch, 10 miles east of	Los Angeles	California
Liebre Ranch, near to	Los Angeles	California
Little Kern River, near source	Tulare	California

Death Valley Expedition Locality Name	County	State
Little Lake	Inyo	California
Little Lake, 10 miles south of	Inyo	California
Lodi	San Joaquin	California
Lone Pine	Inyo	California
Lone Pine Creek Cañon	Inyo	California
Lone Willow Spring	San Bernardino	California
Long John Cañon	Inyo	California
Long Valley (Inyo County)	Inyo	California
Long Valley (Mono County)	Mono	California
Mammoth	Mono	California
Mammoth Pass	Madera / Mono	California
Maturango Peak	Inyo	California
Maturango Spring	Inyo	California
Meadow Creek Valley	Lincoln	Nevada
Medbury Spring	Inyo	California
Merced River, near head	Mariposa	California
Mesquite Spring (Funeral Mountains)	Inyo	California
Mesquite Valley	Inyo	California
Mesquite Well	Inyo	California
Mesquite Well, near to	Inyo	California
Michigan Bluff	Placer	California
Mill Creek Cañon, Panamint Valley	Inyo	California
Miller Ranch	Kern	California
Mineral King	Tulare	California
Mineral King, 1 mile below	Tulare	California
Mineral King, 2 miles south of	Tulare	California
Mohave	Kern	California
Mohave, 8 miles northwest of	Kern	California
Mohave, 10 miles south of	Kern	California
Monache Meadows	Tulare	California
Monterey	Monterey	California
Moran's	Mono	California
Morro	San Luis Obispo	California
Morro Rock, near to	San Luis Obispo	California
Mount Lyell	Madera / Tulare	California
Mount Magruder	Esmeralda	Nevada
Mount Piños	Kern / Ventura	California

Death Valley Expedition Locality Name	County	State
Mount Whitney	Inyo / Tulare	California
Mountain Meadows	Washington	Utah
Mountain Springs	Clark	Nevada
Mountain Springs, 2 miles west of	Clark	Nevada
Muddy River Valley, downstream end	Clark	Nevada
Mulkey Meadows	Tulare	California
Nopah Range, south end	Inyo	California
Nordhoff, near to	Ventura	California
Oasis Valley	Nye	Nevada
Oasis Valley, 10 miles west of upper end	Nye	Nevada
Oasis Valley, head of valley	Nye	Nevada
Oasis Valley, lower end	Nye	Nevada
Ojai Valley	Ventura	California
Olancha	Inyo	California
Olancha Creek, mouth of cañon	Inyo	California
Olancha Peak	Inyo / Tulare	California
Olancha, 2 miles west of	Inyo	California
Olancha, 3 miles west of	Inyo	California
Olancha, 5 miles southwest of	Inyo	California
Onion Valley	Inyo	California
Onyx	Kern	California
Overton	Clark	Nevada
Owens Lake	Inyo	California
Owens Lake, 12 miles south of lake	Inyo	California
Owens River, near Lone Pine	Inyo	California
Owens Valley	Inyo	California
Owens Valley, northern portion	Inyo	California
Owl Holes	San Bernardino	California
Pahranagat Mountains	Lincoln	Nevada
Pahranagat Valley	Lincoln	Nevada
Pahroc Plain	Lincoln	Nevada
Pahroc Spring	Lincoln	Nevada
Pahrump Valley	Nye	Nevada
Pahrump Valley, southwest side	Inyo	California
Pahrump Valley, west side	Nye	Nevada
Pahrump Valley, west side, near Stewart Well	Nye	Nevada
Palm Springs	Riverside	California

Death Valley Expedition Locality Name	County	State
Pampa	Kern	California
Panaca	Lincoln	Nevada
Panaca, 6 miles west of	Lincoln	Nevada
Panaca, 25 miles east of	Iron	Utah
Panamint	Inyo	California
Panamint Mountains	Inyo	California
Panamint Valley	Inyo	California
Panamint Valley, north end	Inyo	California
Perognathus Flat	Inyo	California
Pilot Knob	San Bernardino	California
Pine City	Mono	California
Poso	Kern	California
Post Office Spring, 13 miles south of	Inyo	California
Pozo	San Luis Obispo	California
Pozo Summit	San Luis Obispo	California
Pruit's Ranch	Kern	California
Pyramid Peak, near to	Inyo	California
Quartz Spring	Lincoln	Nevada
Raymond Well	Kern	California
Reche Cañon	Riverside / San Bernardino	California
Reese River Cañon	Nye	Nevada
Reese River Valley	Lander	Nevada
Reese River, at junction of Indian Creek	Nye	Nevada
Reese River, Lander - Nye county line	Lander / Nye	Nevada
Resting Springs	Inyo	California
Riverside	Riverside	California
Rock Creek	Tulare	California
Rocklin	Placer	California
Rose Station	Kern	California
Rose Station, 5 miles north of	Kern	California
Round Valley	Inyo	California
Saint George	Washington	Utah
Saint George, 10 miles northwest of	Washington	Utah
Saline Valley	Inyo	California
Salt Spring Cañon	San Bernardino	California
Salt Wells (Death Valley)	Inyo	California

Death Valley Expedition Locality Name	County	State
Salt Wells (Mesquite Valley)	Inyo	California
Salt Wells Valley (Indian Wells Valley)	Kern	California
Salt Wells Valley, between Raymond Well and Indian Well	Kern	California
San Bernardino	San Bernardino	California
San Emigdio	Kern	California
San Emigdio Cañon	Kern	California
San Emigdio Cañon, head of	Kern	California
San Gorgonio Pass	Riverside	California
San Jacinto	Riverside	California
San Joaquin River	Fresno / Madera	California
San Joaquin River, 3000 feet	Fresno / Madera	California
San Joaquin River, lower	Fresno / Madera	California
San Joaquin River, near head	Madera	California
San Luis Obispo	San Luis Obispo	California
San Luis Obispo, 12 miles west of	San Luis Obispo	California
San Simeon	San Luis Obispo	California
San Simeon, mountains near to	San Luis Obispo	California
San Simeon, near to	San Luis Obispo	California
Santa Barbara	Santa Barbara	California
Santa Barbara, near to	Santa Barbara	California
Santa Clara Creek, 20 miles above Saint George	Washington	Utah
Santa Clara River Valley, downstream end	Washington	Utah
Santa Inez Mountains	Santa Barbara	California
Santa Inez River	Santa Barbara	California
Santa Inez River, mouth	Santa Barbara	California
Santa Margarita	San Luis Obispo	California
Santa Maria River	Santa Barbara	California
Santa Paula	Ventura	California
Santa Yñez Mission	Santa Barbara	California
Saratoga Springs	San Bernardino	California
Sarcobatus Flat	Nye	Nevada
Searles' Garden	Inyo	California
Sheep Spring (Summit Spring)	Lincoln	Nevada
Shepherd Cañon	Inyo	California
Shoshone Mountains	Lander / Nye	Nevada
Sierra Nevada, near Lone Pine	Inyo	California
Sierra Nevada, southern end	Tulare	California

Death Valley Expedition Locality Name	County	State
Sierra Nevada, southern portion, west slope	Tulare	California
Silver Creek	Lander	Nevada
Sisquoc	Santa Barbara	California
Slate Range Crossing	Inyo	California
Smith Creek Valley	Lander	Nevada
Soda Springs	Tulare	California
Stone Cañon, downgradient end	Inyo	California
Summit Meadow	Tulare	California
Surprise Cañon	Inyo	California
Table Mountain, base of	Nye	Nevada
Tehachapi	Kern	California
Tehachapi Pass	Kern	California
Tejon Pass	Los Angeles	California
Tejon Pass, 5 miles west of	Kern	California
Tejon Pass, 8 miles west of	Kern	California
Tejon Ranch	Kern	California
Telescope Peak, northwest base	Inyo	California
Temploa Mountains	Kern / San Luis Obispo	California
Thorpe Mill	Nye	Nevada
Three Rivers	Tulare	California
Timpahute Mountains	Lincoln	Nevada
Tipton	Tulare	California
Topanga Mountains	Ventura	California
Triangle Spring	Inyo	California
Trout Meadows	Tulare	California
Tulare	Tulare	California
Tulare Lake	Kings	California
Tule Cañon	Esmeralda	Nevada
Tule River	Tulare	California
Tule River, near head	Tulare	California
Twelve Mile Spring	Inyo	California
Twelve Mile Spring, 1 mile south of	Inyo	California
Tyndall Creek	Tulare	California
Ventura River, near to	Ventura	California
Victor	San Bernardino	California
Virgin River - Rogers Wash intersection	Clark	Nevada
Virgin River Valley, downstream end	Clark	Nevada

Death Valley Expedition Locality Name	County	State
Virgin River, 7 miles above Bunkerville	Mohave	Arizona
Visalia	Tulare	California
Walker Basin	Kern	California
Walker Pass	Kern	California
Walker Pass, east slope	Kern	California
Walker Pass, north side	Kern	California
Walker Pass, west slope	Kern	California
Wawona	Mariposa	California
Wheeler Spring	Inyo	California
White Chief Peak	Tulare	California
White Mountains	Inyo / Mono	California
White Mountains, near Big Pine	Inyo	California
White Mountains, summit	Mono	California
Whitney Creek	Tulare	California
Wild Rose Spring	Inyo	California
Wildrose Cañon, upper	Inyo	California
Willow Creek, Panamint Mountains	Inyo	California
Willow Creek, Panamint Mountains, head of	Inyo	California
Willow Spring (13 miles southwest of Mohave)	Kern	California
Windy Gap	San Bernardino	California
Wood Cañon	Nye	Nevada
Yosemite Valley	Mariposa	California
Yount's Ranch	Nye	Nevada

